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THE

NATIONAL GUARD

IN SERVICE.

Edited

by

Albert Ordway.

A COURSE OF LECTURES

DELIVERED

FOR THE INSTRUCTION OF THE OFFICERS

OF THE

DISTRICT OF COLUMBIA-NATIONAL GUARD

IN THEIR

DUTIES IN FIELD SERVICE.

WASHINGTON, D. C.:
JAMES J. CHAPMAN.
1891.

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PREFACE.

These lectures are published at the solicitation of many officers of the District of Columbia National Guard, who have expressed a desire to preserve for careful study and future use the lessons to which they listened with much attention and profit, and also in the hope that they may be of value to the National Guard throughout the country.

I cannot permit this opportunity to pass without publicly expressing my thanks to the officers who delivered these lectures. When Army officers of their education and experience volunteer to aid, and so cheerfully, even enthusiastically, coöperate in the instruction of the National Guard, and the officers of the National Guard so eagerly seek such instruction, and gladly give up their few leisure hours to obtain it, we may safely depend on such coöperation between the regular and reserve military forces of the country as will assure the safety of our institutions in any emergency.

The purpose and plan of these lectures may be understood without further preface from the following circular which announced them:

HEADQUARTERS DISTRICT OF COLUMBIA MILITIA,
Washington, D. C., December 13, 1890.

Outline of a Proposed Course of Instruction for Officers of the District of Columbia National Guard in Their Duties in Field Service.

It is proposed to convey the instruction by a course of lectures based on the assumption that the President has called out the

militia for three months' service, to hold the defensive until armies can be raised; and, by following out their supposed movements from the time the orders of the President are received until the expiration of their term of service, to embrace in the lectures every duty of subordinate officers in the field.

It is not proposed to discuss the art of war, but to confine the lectures to instruction in knowledge that a subordinate militia officer should possess, and in duties that he should be prepared to perform in an emergency. The lectures, therefore, must omit much that might be looked for in an ordinary professional text book, but they will be given with the purpose of affording practical instruction to all officers, and in the hope of interesting a few to seek for such further instruction as would be essential to them in higher positions or in service beyond the time that military operations would be intrusted to the militia.

Lecture 1.

Duties of officers on receiving orders for service.

Requirements of law relative to men obeying orders calling them into service.

Clothing and equipment necessary for a company: What each soldier should be allowed to carry, and necessity of inspection before embarking to prevent them from overloading themselves; outfit and baggage that officers should provide for themselves.

Muster-rolls: Manner of preparing them; manner and meaning of muster.

How to embark troops on railway trains and steamboats; how to provide for and conduct both long and short journeys by rail and steamboat.

Disembarkation: How to be made when no precautions necessary, and also when troops are carried into an insurgent district where opposition or interference is possible.

Lecture 2.

Assuming that the command has reached a point of rendezvous appointed for the purpose of organizing them preparatory to service, and that during such period of organization drill and instruction would be given to prepare them for active service, this lecture and the one following will cover subjects that should be included in such instruction.

Camps: Selection of location; manner of laying out; pitching tents; drainage and sanitary regulations; expedients for comfort; duties of officers in caring for health and comfort of men.

Camp cooking: Methods of caring for, utilizing, and commuting subsistence supplies; instruction in cooking; necessity of commanding officers attending both to supplies and methods of cooking them; officers' mess and how to supply it.

Correspondence and returns: Forms of, and reasons for such forms; necessity of making full and prompt returns; pay-rolls; care of public property and accountability for it; necessity of every officer keeping accurate record of events, and especially of company commanders making record of everything relating to each man in his company.

Duties of Staff officers: Description of the duties of Adjutants, Quartermasters, and Commissaries; their authority as staff officers, and their relations to their commanding officer and to officers of the command.

LECTURE 3.

Discipline: Qualities essential in officers to exercise command and enforce discipline; teaching raw troops the reasons and necessity for discipline; no grade exempt from the requirements of discipline.

Drill and instruction: Time in rendezvous camp should be devoted to essential matters; mechanical accuracy and clock-like precision in minor details not the most essential; description of the most essential points in which to instruct raw troops in preparing them for field service.

Guard duty: Its importance as one of the best methods of training men in habits of discipline and preparing them for properly performing grand guard, outpost, and picket duty; description in detail of the duties of camp guards and sentinels.

Skirmishing: Description of drill and methods of instructing in it; its importance under modern conditions of warfare; application of the drill in actual conflict, and modifications of it according to circumstances.

Fire discipline: When and how to use different kinds of fire; necessity of control of fire and delivering it only under orders; waste and supply of ammunition.

LECTURE 4.

Assuming that the troops, having been organized in rendezvous camp, are ordered to march and occupy strategic points to be held for defense.

Marches: Preparing for the march; breaking camp; baggage allowed; time of making and duration of halts; right of way on roads; length of column; boots, socks, and feet; food and water; precautions against fatigue; marches in presence of the enemy, tactical and strategic, front, flank, and retrograde; advance guards, rear guards, and flankers; wagon train and guards; forced marches; night marches; bivouacs.

LECTURE 5.

Assuming that the troops have reached the point designated to be occupied and held by them, this lecture and the two succeeding ones will cover the duties that would or might devolve on them at that point.

Grand guards, outposts, and pickets: Objects and importance of; selecting locations for, and methods of posting; duties of; how to act in case of attack.

Reconnoissances and scouting: Objects and necessity of; open and secret; how to conduct; how to defeat objects of reconnoissances by the enemy.

LECTURE 6.

Field fortifications: Objects of; selecting sites for; how to lay out; different kinds and forms of redoubts and lines; nomenclature.

Temporary entrenchments: Materials for and methods of constructing; their use in modern warfare.

Sieges: Reasons for and methods of conducting; description of gabions, fascines, sap-rollers, and other appliances, with mode of using.

LECTURE 7.

Assuming that enemy make a demonstration and attack.

Attack and defense: The militia are assumed to be located in an entrenched camp, and the instruction would therefore apply principally to the attack and defense of entrenched positions,

but to cover outlying operations should also embrace attack and defense in the open field, and of villages, woods, defiles, bridges, and fords.

Pursuit of the enemy: Preparations for and methods of conducting.

Retreat: Preparations for and methods of conducting.

LECTURE 8.

Preparation of muster-out rolls and discharge of troops.

Concise review of the lessons taught in the preceding lectures, dwelling on the most essential and salient points therein, and closing with an argument on the necessity of maintaining an efficient militia, as required by the Constitution, and emphasizing its importance as a school of instruction to train young men for possible war.

ADDITIONAL LECTURES.

In addition to the eight lectures outlined as a course of instruction in field duties, the following lectures will be given on special subjects:

LECTURE 9.

Preservation of health: Precautions to be taken by soldiers, and necessity for officers to enforce such precautions; simple remedies for ordinary ailments.

Care of wounded: Description of first thing necessary to be done in cases of gunshot wounds, fractures of bone, sunstroke, freezing, cuts, bruises, burns, and all ordinary accidents.

LECTURE 10.

Rifle practice: Position, aiming, and sighting drill; gallery practice; range practice; estimating distances; skirmish firing drill; competitive matches; care of rifle.

LECTURE 11.

Signal corps duties.

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LECTURE NO. 1.

BY FIRST LIEUTENANT CONSTANTINE CHASE, THIRD ARTILLERY, U. S. ARMY.

Duties of officers on receiving orders for active service; muster-in; embarkation; travel; disembarkation.

In dealing with such a subject as that upon which I am expected to address you on this occasion, I think it may be more interesting to you if I first touch upon the history of the militia sufficiently to sketch in outline the inception, aim, and growth of the force of which you are members, inasmuch as tradition whets one's sense of duty and makes us steadfast—virtues quite essential to military success.

Too many of our ablest, but in this direction misguided, citizens have preached that "the remoteness of our country from Europe, our wise policy of avoiding entangling alliances, and of abstaining from interference in the affairs of foreign nations, renders war to us less probable;" while, notwithstanding these favorable circumstances, the facts are that we have been at war, or in imminent danger of war, at least twelve times since the termination of the Revolutionary struggle, to wit, in 1799, with France; in 1812, with England; in 1830, with South Carolina; in 1836, with France; in 1838, with the Indians in Florida; in 1839, with England; in 1841, with England and Canada; in 1842, with England; in 1846, with Mexico; in 1846, with England; in 1861–1865, the great Rebellion, which profoundly shook our

Government and endangered our existence; and in 1865, with France; to say nothing of the occasional outbreaks of the Indians of the plains, and the Mormons, or of the labor riots of 1877.

I do not mention these occurrences to bemoan them, for they were necessary to our education and progress as a people and ought to forever set aside our English legacy that "a military force is a menace to the State," to which we have added "and inimical to representative institutions;" but they are mentioned as a suggestion of the fallacy of expecting to transfer in an instant, money into armies, armaments, equipments, and in confirmation of the fact that an efficent military force is essential to our existence.

Fortunately this question, as well as what that military force should be, have been definitely settled among us; and we are to have a small regular army as the first line, with the militia, or National Guard, as the second.

Under the power granted by the Constitution, Congress in 1792 passed an act enrolling all able-bodied white male citizens from eighteen to forty-five years (with certain exceptions) in the militia and organizing them; all the enrolled to provide themselves with arms and equipments. In 1794 the Secretary of War, General Knox, having reported that a further provision was needed to secure obedience to the call of the Government—that is, the Federal Executive—and that the militia, when in service, should be bound by the military code of the United States, Congress in 1795 authorized the President to call out the militia in prospect of invasion, insurrection, or to enforce the laws; the militia when called out to be subject to the rules and articles of war, and to serve only three months in any twelve.

Again in 1794 the Secretary of War reported that of 450,000 militia not 100,000 were properly armed, and that in the existing state of affairs, as arms could not be imported, we must manufacture them. This report having been confirmed by a congressional committee the same year and corroborated by another committee in 1806, Congress in 1808 appropriated $200,000 annually for the purpose of providing arms and equipment for the militia.

These three acts were considered to have exhausted the responsibility and authority of Congress. It therefore remained for the States, to which the right of officering and training the militia had been reserved, to exercise that right, and to carry into execution the laws of Congress, by supplementary legislation.

Some States coöperated with zeal, but others failing to do so, a committee of Congress reported, also in 1794, that there was need of a more energetic system, but that Congress was prohibited by the Constitution from making any alteration, and that the States could, if they would, establish an uniform and efficient militia.

In 1803 another committee reported that the President should urge the executive of each State to carry the militia system of 1792 into effect, and again, in 1810, that the power of the Federal Government was qualified, and that the States must make the militia more efficient; and so on, from time to time, the States were exhorted, but to little or no purpose, and it was only in the oldest, richest, and most populous States that even arms enough could be procured by individuals or by the Government, or that the spirit of the law of 1792 was at all alive.

Again, too, "the want of a simple system of tactics and of books to disseminate the knowledge of it prevented uniformity where the men were trained, and in

some parts of the country precluded the possibility of any training."

The numerous exemptions granted by the State Governments and the insignificant fines imposed upon delinquents combined to absolve from personal service the most educated or wealthy citizens (and those holding the highest offices), leaving in the ranks those whose pecuniary inability made service compulsory—"a most anti-republican inversion of justice which excited righteous resentment."

Moreover, "those who could afford the outlay of time and money withdrew into volunteer corps, whose shining equipments, showy uniforms, and fairly precise movements contrasted violently with the ill-armed, half-equipped, motley-clad militia."

These circumstances disheartened the militia, and as men of influence were not to be found in the ranks, nor would accept commissions save for a short time, offices of responsibility fell into the hands of ambitious men only to be used by them as stepping-stones, or to gain titles they could not earn; and thus, in short, the system of an universal militia failed.

The question of rendering the militia more efficient by classifying it, which had been discussed and recommended by such men as Washington, Hamilton, and Knox as early as 1786, '90, and '94, was again presented to Congress by President Madison in 1810, and by committees and Secretaries of War in 1816, '17, '18; but their various plans were rejected.

In 1819 a committee of Congress—General Harrison, chairman—recommended instructing officers and non-commissioned officers only, and argued that in this way the militia might, when called into service, be quickly rendered efficient, and at a less expense than was imposed by the militia trainings.

In 1825 a board of officers under General Scott repeated this recommendation; but no effort was taken to carry it into effect, and the only recourse was found, beside the regular army, in the volunteer militia corps, of which many had been formed of the younger and most zealous members of the militia, as has been heretofore cited.

"In the cities and towns of the most populous States these corps were numerous, and were comparatively well drilled and disciplined, and their promptness to respond to the calls of the Government, from the War of 1812 down to the Rebellion of 1861, and their soldier-like conduct, have done honor to themselves and to the country;" but the militia law of 1792 is still on the statute books, a living remonstrance against blindness and apathy in national defense.

But you, gentlemen of the National Guard of the District of Columbia, are to be envied; for, through the astuteness, energy, and foresight of a gentleman now sitting in this room, Congress has passed the law of your regeneration—the "Act to provide for the organization of the militia of the District of Columbia," approved March 1, 1889.

Many of my comrades of the regular army, as well as myself, have been here to witness your efforts in response to that law; but it would be following a formula which has become too common among us to still heap praises upon you for those efforts, and I refrain, because any earnest, sensible man knows well enough when he has "acted well his part." Suffice it to say that your position in the National Guard of the country is a most conspicuous one, and that while you have done well, much more is expected of you, as time goes on, in the amelioration of the condition of the peculiar military service you represent. Your comrades of the States,

while they regard what you have accomplished with pride and wonder, expect help from you, and that help can only flow from renewed efforts on your part.

I have no call to ask you if you will do your duty, knowing as I do your short but brilliant history; but I tell you that you must, because you represent a cardinal principle in the Government of this country, and you cannot recede. In fact, there is that about your existence as a part of the National Guard that will make it a shame for any man of you to be found faltering or wanting.

In passing to the more practical features of our subject I therefore feel justified in the assumption that to a great degree you already hold, not only the outward and practical command of your soldiers, which is a superficial beauty, but also that moral command which is able to lead men to their life's end, if need be, in obedience to their sense of duty; or, in other words, that you possess the germs of a discipline which is only thoroughly known to the soul of a soldier.

The hypothesis upon which my remarks this evening are based assumes that you are called by the President for three months' duty in the service of the United States. From what precedes, what, then, are your duties in such an hour of test and trial?

The law of your organization gives you the same armament, equipment, and supplies, as are given the regular army. The world knows that you have the two first, and assumes, or has the right to assume, that you, as officers, have been in all things faithful to your charge, and have held frequent inspections to see that your men are properly clothed and equipped for field service—we need not mention drill and military education here. In military parlance, you are now called upon to mobilize, and the law brooks no trifling or delay.

Where action of this kind has been taken, the supreme authority has of course selected and designated a place of general rendezvous or muster; and, as the practice is, orders will become more minute as to detail as they descend from the supreme authority to the lowest. The President's requisition will therefore be passed to you through your commanding general, who will exercise his discretion as to the extent of detail to be conveyed to you therein, and you should remember that his task will be lightened proportionately as his officers are able to appreciate what is to be done in their respective spheres without the multiplication of words—that is to say, when his command is able to yield to him an active and intelligent, not merely a technical and passive, obedience. In fact, it is for this end that you spend your time in instruction. The same is also true with your colonels and other superior officers, who are, as it were, the general's coadjutors.

But it is more particularly upon the company officers that the care of details and the personal comfort of individuals always must and should devolve; consequently a sketch of their duties is more profitable at this time, and it is in this field that we shall first glean.

Given, then, the order for mobilization, the first duty of the captain (and, of course, his assistants, the lieutenants) is to warn the men and assemble the company; and here, let me interpolate, the law is implacable in the case of delinquents, for "no officer or soldier of the National Guard when ordered * * * into the service of the United States in obedience to the call or order of the President shall be excused from such duty except upon the certificate of the surgeon of his command of physical disability," etc. (See act of March 1, 1889.)

Naturally, the place of assembly of the company will

be the armory; and in most cities and large towns, if time presses, the general warning would be given by a well-understood signal of the fire-alarm—at least such has become the custom in many places. The order for assembly will also naturally enjoin, or mean, that all organizations must appear in what is known as field dress and heavy marching order, or, as that grim, glorious old regular soldier, the first sergeant, would say, "the men will march with full kits and no extras." But before we look at this feature, let us consider the intervening duties of the captain.

The men having responded to the warning, absentees must be accounted for, in order that it may be definitely known who is sick and who has defaulted. These facts established, report should promptly be made to the next higher authority. Meantime it will be the duty of the captain to fill any and all vacancies in the company by the enlistment of men who may present themselves who have before been in the National Guard and have been honorably discharged therefrom or who have had military instruction. The enlistment of men other than these should be specially authorized if deemed necessary to be done.

It will now be the captain's duty to prepare the muster-in rolls of the company. This is a most important matter; for no officer or man of volunteers or militia is properly in the United States service or authorized to receive pay or allowance until mustered in by the proper officer, and no officer or man is properly out of service until discharged in orders or mustered out by the proper officer; so that the muster-in roll is the initiatory record of the organization as a part of the armies of the United States, establishing the rights to pay and allowances of all whose names are borne upon it. Again, "it is the duty of all officers, especially commanders of

regiments, captains, medical officers, and adjutants, to make and preserve with care all rolls, returns, and records relating to the personal history of officers and men," and the more complete and full these records are, the more easily can the claims of heirs and of disabled soldiers be established.

Let us, therefore, see what a muster-in roll is. It is made on a printed blank bearing a heading descriptive of the organization to be mustered in, and the names of the officers, non-commissioned officers, musicians, and privates, each category being numbered in series 1, 2, 3, 4, etc. Opposite each name, to the right, follows rank, age, when joined for duty and enrolled, where, by whom, period, travel to place of rendezvous, number of miles, valuation in dollars of horses and horse equipments, if mounted and furnished by the individual; lastly, remarks. Every man whose name is upon this roll must be accounted for on the next muster roll, and so on to the end of service.

The correctness of this roll is certified to by the captain, and the roll is countersigned by the mustering officer after the muster-in.

Only officers of the regular army are detailed to muster into or out of the service of the United States, and no officer will make these musters unless so detailed by the War Department. Moreover, the exchange of men by substitution after the muster-in is forbidden. The dating back of a muster-in is also forbidden, except by authority of the War Department, the circumstances of which it is not necessary to relate here.

Four copies of the muster-in roll are to be made, one of which will be returned to the captain of the company by the mustering officer after the muster-in, who disposes of the other three as follows: One to the adjutant-general of the army, one to the paymaster-general of the

army, and one to the adjutant-general of the militia of the State or Territory furnishing the troops so mustered.

It is also usual, when troops are to be mustered into the service of the United States, for the officers and men to be minutely examined by a medical officer to ascertain whether they have the physical qualifications necessary for military service; and in case any individual shall be discharged within one month after entering the service he shall receive neither pay nor allowances, except subsistence and transportation to his home. Therefore the rolls cannot be properly completed until such examination is made and certified to by a properly authorized medical officer.

These duties having been completed, the company is ready for muster-in, and should be so reported to the captain; but if difficulty is found in completing the organization, the case becomes a special one, of which we need not speak just now. Meanwhile the captain will address himself to the duty of ascertaining the true state of the arms, equipment, and uniform clothing of the company, for the men should appear in these articles when the muster-in takes place, if practicable.

We have said that the order of call would state, or mean, that the men must appear in field dress and heavy marching order, or "full kits and no extras." What is field dress and heavy marching order? What is meant by "full kits and no extras"? With most of you these points I have no doubt are already familiar; still a few words are not out of place.

FIELD DRESS

is the uniform prescribed for field service; in which the soldier is expected to wear on his person a good undershirt, drawers, socks, a good flannel overshirt, the regulation blouse, trousers, and leggings (for foot troops),

forage cap, or campaign hat, or cork helmet, as may be prescribed, and a good pair of walking shoes. To these may be added the great-coat. There are other articles beside these, that may be issued for special occasions or service, but they need not be mentioned at this time. All these articles are issued by the quartermaster's department at proper times, and upon requisitions from the captains duly approved. In the case of troops not yet mustered into service, such requisitions, as well as those for other classes of property, must receive the approval of the proper mustering officer.

In this connection I think it well to interpolate an earnest caution against overloading the men, or permitting them to overload themselves; for in these days of railroads and telegraphs an army is seldom very far from its base of supplies, from which articles of comfort may easily be drawn; hence the men ought to be prevented from carrying unauthorized articles on their persons; in fact, orders against such a practice should be inflexible.

HEAVY MARCHING ORDER

signifies that the troops are to be accoutered with the equipments, duly packed, that are provided for the march or the field. These consist of a canvas cartridge-belt, bayonet scabbard, haversack and its appendages, canteen and blanket-bag or knapsack—technically the former, although the name is objectionable. Of course the men carry their armanent as well as ammunition, when the latter is ordered and issued.

The blanket-bag is intended to be packed with the woolen blanket, between the folds of which, or elsewhere in the bag, are one undershirt, one flannel overshirt, one pair of drawers, two pairs of socks, towel, brushes, comb, soap, and the "soldier's pocket account book," issued from the adjutant-general's office, to which may be

added a "housewife," or needle book, and a small prayer book or Testament, if the man wishes. Strapped on top of the blanket-bag is the great-coat, rolled, with the rubber blanket covering it, if the latter is taken, which it ought to be in the case of fresh troops bound for the field.

The haversack is intended to hold the soldier's rations, in quantity as ordered, but not exceeding a supply for three days. Its appendages are two tin plates or mess pans, fitting one to the other and making a shape something like a canteen. One of these plates has a handle, which permits its use as a skillet, and inside the plates is a knife, fork, and a large and small spoon. Then a tin quart-cup is fastened outside the haversack, so that each man practically carries his own kitchen.

The canteen needs no description.

These equipments, packed as above described, constitute the soldier's kit, as it is called, so that we now know what is meant by "full kits and no extras;" for, as has already been said, no unauthorized article is to be carried by the men, nor, indeed, will they want to carry them as they become seasoned for service, for they become a burden.

I have spoken thus far more particularly of the infantry, because it is the principal arm in all armies, and is and should be in the National Guard. The field dress of mounted troops is practically the same, save the top-boots, spurs, etc., worn by the latter, while the equipment differs in size, shape, and mode of carrying according as it is a case of cavalry or artillery. An account of this would require a special notice exceeding the limit for this lecture.

It is now the duty of the captain to ascertain the true condition of these appointments, including arms, of his company, and this he does by a minute inspection of the

men in ranks. He will note any discoverable flaw or deficiency, and will be assisted by his lieutenants. It may be assumed that the men have been practiced in wearing their kits and bearing their arms gracefully and properly; but the captain now critically notices whether or not the cartridge-belts are worn easily around the waist, the haversacks slung from the right shoulder to the left side, the canteens *vice versa*, and the blanket-bags are worn high on the shoulders and hang so as not to interfere with the movements of the men. In short, he notices minutely all points about fit and fitness of clothing, equipments, and armament, because now is the time to correct faults and insure as far as may be the efficiency and future comfort of his command.

This inspection ended, the captain, or "company father," as the Germans familiarly call him, is in a position to replace deficiencies and complete the preparation of his men. This he must take steps to do at once by requisitions on the quartermaster's department for clothing and equipage; on the ordnance department for armament, equipments, and, if ordered, ammunition; on the subsistence department for rations. He will add, if directed, to his quartermaster requisitions the company tentage and kitchen outfit.

As the hypothesis under which we are proceeding sends the troops to a general rendezvous, the question as to whether tentage is to be taken is a matter for decision by authority higher than the captain. The captain's requisition for this class of supplies, if he has to make one, must conform to the rules of issue that are laid down in the regular service each year in general orders, in what is known as the "clothing order," and which is very liberal in the matter of selection as to kinds. In fact, no military service in the world has

such an extravagant list to select from as that to be found in the United States Army clothing and equipage order.

Under the premises given and assumed above, we have for tentage the hospital tent, the wall tent, the common tent. The captain's requisition would be based upon the following (present) allowance:

One common tent for every six foot or four mounted men.

One wall tent complete for himself.

One wall tent complete for each two lieutenants.

One axe and one hatchet for himself.

One axe and one hatchet for each two lieutenants.

To the men are allowed two axes, two hatchets, two spades, two pick-axes for every fifteen foot or thirteen mounted men.

It should be remarked here that hospital tents are exclusively issued for the use of the sick and for hospital purposes.

The kitchen outfit would be: two mess kettles and five mess pans to every fifteen foot or thirteen mounted men.

I will not discuss the relative merits of tentage here, and it is right to add that the allowances given above prescribe further demands, unless peculiar circumstances develop a necessity, or orders change the kind of tentage. Necessities must always be made apparent.

Loyalty to our hypothesis also causes me to refrain from a discussion of the ration. As a matter of fact, when fresh troops are drawn to a general rendezvous, as in the case in hand, they would draw camp equipage, fuel, forage, and straw, and rations on the ground. At any rate, the matter of rations would probably be settled for them for some days after their arrival, and would then be a subject for instruction on the spot; hence

the liberty is taken of passing these at this time without further remark.

Now a few words as to the first sergeant, and we will have finished. His responsibility is almost of vital importance, and the more efficient he is, the lighter is the task of the captain who has instructed him. He must be an assistant to the captain in every sense of the word, and his supervision of the interests of the company is minute, constant, and ubiquitous. To facilitate many of his duties, he should keep a little pocket book in which he enters the names of the men of the company, and opposite each name the man's company number. Every article of the soldier's kit has each plainly marked upon it the letter of the company and the company number of the man to whom it is issued, and all are duly entered in this book after the man's name. This is the only method of finding or accounting for property readily. The captain should inspect the articles and the book to see that they correspond.

To facilitate clerical work, and there is a deal of it, the captain should provide, by requisition on the quartermaster's department, the company field-desk, which must contain the company books and a proper stock of blanks of all kinds for company use.

Little need be said concerning the officers, except that an officer's equipment should be of the least possible weight and contain the fewest articles compatible with the maintenance of health. Comfort must be disregarded when men take the field, as it is only a personal matter; but it is essential, for the good of the service, that officers should keep themselves in such good condition that they are at all times ready to do the hardest work appertaining to their rank and condition in the service. Of course, the officer's dress will be much like that of the men in material, but befitting his rank, and

he may carry a small valise, say eighteen or twenty-four inches long, in which he ought to be able to stow every essential to personal needs or professional efficiency. As for bedding, a very good article consists of a water-proof sheet, say twenty-six inches wide, ending in a cylindrical-shaped bag, which may be made to constitute the valise and at the same time form a pillow. Along the sides of this sheet, from the valise part to the end, two flaps are sewn, which may be folded inward. Upon this is laid the blankets, and the whole may be neatly rolled round the valise part and securely strapped for transportation. By scraping away the earth to form a hollow for the hips, a very good bed will be formed; but wherever it can be done, it is best to raise the body above the ground. This is merely thrown out as a suggestion, and is not at all new.

It may now be said that the period of preparation is passed with fulfillment of the duties that have just been sketched and the hour of muster-in has arrived. The mustering officer, who is usually accompanied by the superior officers of the regiment or brigade, now appears and the company is formed for his inspection in order that he may be able to certify truly that, "after careful examination of the men whose names are borne upon the muster-roll, their horses (if mounted), arms, and equipments, etc., he accepts them into the service of the United States for the term of — years from the — day of ——, 18–."

This inspection is made in the usual form as laid down in the drill book; then the names are called from the muster-in roll, the men and officers answer "here," and the mustering officer administers the oath of allegiance and faith, which is the soldier's consecration. Great and serious are the duties thus imposed upon him. His life is no longer his own property. It is every

moment at the disposal of his country. No question; no hesitation is allowed. Obedience is his only duty.

This is a most serious and holy ceremony—so serious and so holy that founders of religious sects have regarded it with terror, and considered mankind too weak to take any oath; but it is well that a soldier should do so, because he is often placed where his courage and self-denial are put to a test which surpasses the bounds of all human strength and endurance. His oath makes him responsible to God, for he swears: "As true as God will help me to eternal salvation!" (So wahr mir Gott helfe, zur ewigen Seligkeit.)

But there is adjutant's call! The others have been mustered in company by company, and then the field and staff. The regiment—your own brigade, if you please—is in service and has "got the route." March out!

The command is now ready to march to the railway station or wharf, where it is to embark for the general rendezvous, and this brings us to the second part of our subject.

During the period of preparation the commanding officer will have made requisition on the quartermaster's department for the necessary means of transportation for his troops. This is a matter of calculation based, of course, upon the number to be transported and the capacity of the rolling stock or vessel to be employed. Consequently the number of persons, horses, guns, quantity of material, etc., should be accurately given to the quartermaster having charge of the transportation, in order that he may make an intelligent contract with the railway, steamboat, or other authorities.

Let us first consider railway transportation.

For short journeys the ordinary passenger car is used; but for long journeys, or where night travel is involved,

other arrangements will be sought. It is now customary on some roads to use what is known as the "emigrant sleeping car," or better, "the tourists' sleeper."

In this country the average passenger car will seat sixty men, but a small car will seat only fifty. In all cases each car must be liberally supplied with drinking water, lights at night, and with all other conveniences to make it unnecessary for the men to leave them during stoppages of the train.

Baggage will be carried in the ordinary baggage cars, while stores are taken in what are known as freight cars. These differ in capacity.

Artillery carriages and transportation wagons are carried on platform or "gondola" cars. These are generally twenty-eight feet long by eight feet wide. When properly loaded, it will require three of them to carry a four-gun battery. If, however, one is so fortunate as to obtain thirty-two-foot cars of this kind, two will answer.

The most suitable car for carrying horses is a stock car. There are others now coming into use which are better, like what is known as the "palace stock car," used on some of the roads in the Southwest, but we will waive discussion of them here. Ordinary stock cars are usually twenty-seven feet four inches long by seven feet nine inches wide by six feet eight inches high, inside measurement. Each car will carry sixteen artillery or eighteen cavalry horses.

It is preferable that infantry should board the cars at the railway station for passengers; the cavalry and artillery, if mounted, at the cattle platforms, and the stores, if carried, at the freight yards; but when this cannot be done, temporary platforms should be provided and the cars boarded at points, say, three hundred or five hundred yards between organizations.

We will consider the movement of troops by rail under five natural divisions or operations, viz:

1. The march to the point of embarkation.
2. The embarkation.
3. The journey.
4. The disembarkation at the end of the journey.
5. The march after disembarkation.

I.—The March to the Point of Embarkation.

This is a purely military operation, and when the numbers are large great care in detail is necessary to prevent confusion.

It devolves upon the quartermaster's department to make the necessary arrangements and be responsible therefor; consequently, after due consultation with the railway authorities, it is for the quartermaster in charge to fix upon the places where the several arms of the service should embark and where the stores are to be loaded. The time-table for the dispatch of the troops having been made up and the routes to the embarking points having been selected—a duty pertaining to the chief commander, wherein the advice of the quartermaster is sought—orders for the march would issue so that the troops would reach those points precisely at the required hour.

To insure this, the distances must be accurately calculated and the march conducted accordingly, for reaching the station too soon may destroy the very best arrangements. This common fault arises from the fear of being too late, through which one is driven to the opposite extreme. Both extremes are nearly equal in pernicious effects upon military operations in general, and are quite so in moving large bodies of troops by rail. It is important to remember this in all things

military, and we may add for the purpose of this paper that infantry troops march one hundred and twenty paces five-sixths of a yard in length per minute.

The approaches to the embarking points must be kept clear and silence strictly enforced when the troops draw near them; moreover, only the troops for whom the cars are intended will be allowed to enter the station, and the presence of spectators and friends forbidden.

The arrangements to be made by the quartermaster responsible demand great care; but, however well they are devised, they will avail but little unless the regimental officers enforce a strict discipline while marching through the town to the railway, upon their arrival there, and while embarking their men. A very distinguished general officer, many of whose ideas I have already woven into my remarks this evening, has written: "It is during such operations that the discipline of an organization is tested and the discovery made as to how much better it is in some corps than in others. Partial delays and mistakes are inevitable, entailing more or less discomfort upon all ranks, but these petty inconveniences are necessarily attendant upon our lot as soldiers, and they should be accepted cheerfully. Grumbling about the delay and finding fault with the arrangements is not the way to further the interest of the service or the ends aimed at by the special operation in progress, but it is a certain method for causing disorder."

When the station is occupied or threatened by a mob, the latter must be brushed aside and a sufficient space for the troops cleared, and guarded above and below it. Circumstances will govern further action to be taken from the point of view of applied tactics; but this is not germane to the subject.

II.—The Embarkation.

In its broadest significance—that is, as a staff question—is one which embraces the general working of railways, and includes many very important topics; therefore it is far beyond the limits that have been marked down for this paper. However, one cardinal principle must always be observed, and that is that in movements of troops by land or sea the various military units must never be separated without the most cogent reasons for so doing. This holds good down to the smallest organizations. For example, it is very manifest that with the cavalry the horses and the men who ride them must go by the same train; and, in general, it is also essential that whatever may be the number of the cavalry, infantry, or artillery to be transported by cars or vesssel, they must be so carried that they shall be fit for war purposes at the end of the journey and in shape to march off at once upon disembarking.

Civilian traffic managers rarely appreciate this point, and are so apt to forget or ignore it, as well as much more that is almost vital in military operations, that quartermasters cannot be too careful in their terms of agreement with them in this age of contracts, otherwise they are sure to augment the burden and responsibility of that military pack-horse, the quartermaster's department.

It will also be well to have each car marked with the number of men it will contain; and, when handed over to the troops, each regimental or battalion quartermaster should mark on them with chalk the company, battalion, and regiment each car is assigned to—these officers having preceded their troops an hour or two for the purpose of being assigned the cars, etc., intended for the organizations they represent, as well as to attend to any other

preliminaries. In the interest of uniformity, let us suppose that a quartermaster wishes to mark the assignment of a car to Company A, Third Battalion, First Regiment. The marks would be: "A"—3—I—D. C. N. G., using Roman numerals for the regiment and Arabic for the battalion.

Silence must be kept among the men from the moment of entering the station until the train is fairly clear of it. Troops should never add to the noise and bustle of a railway station by shouting or cheering, however enthusiastic they may feel.

EMBARKATION OF MEN.

Infantry will be ordered to unsling their knapsacks before entering the cars, as well as to shift their haversacks, canteens, etc., round to the front of their bodies. This done, the men will receive the order to board the cars, each man carrying his armament and personal equipment with him.

The men are to retain possession of their muskets during the journey, and the latter are never to be laid upon the floor of the car, but must receive the individual care of the men.

The smallest number of men possible will be permitted to fall out of ranks while in the station, and men once in the cars must stay there, unless they belong to necessary fatigue parties. These last will leave their arms and equipments on the cars while employed on such duties; but each company should have a suitable detail of men to handle baggage, and the latter should be taken to the loading point in wagons and loaded on the cars under the direction of the quartermaster before the arrival of the troops at the station, if possible, in order to preclude such parties being told off after the men have embarked. These details remain with the baggage of

their companies until relieved by the guard. It is needless to say that all baggage should be marked with the letter of the company, etc., and that the quartermaster will take account of each piece and of where it is put.

Usually the baggage cars are on a side track near platforms convenient for loading, and the passenger cars are at the passenger platforms.

Upon arrival at the station each company is directed by its quartermaster to the cars assigned to them, and the men are marched there at once. The companies are embarked so that each shall keep its relative position in column—that is, when the train is made up the baggage cars will follow the engine, then the car for the band and non-commissioned staff, then the cars containing the companies in proper order. It is usual to have an officers' car, which is placed at the middle of the train; but if should there be more than one section to the train it would be with the leading one.

A lieutenant is placed in charge, turn about, of each company car for the maintenance of order and to look after the needs of the men. The guard has its headquarters in the baggage cars and furnishes one sentinel for each of these cars, and one at each end of each company car with orders to prevent men from leaving it unless duly authorized.

To embark a company the captain forms it into line facing the car or cars to be occupied, divides it into two platoons, if not already so divided, places a lieutenant in charge of each, and then goes to the center of the car to observe the movement. The lieutenant of the right platoon commands "right face" and forms it into single rank, each man at "trail arms." The platoon enters the car in single file. It is usual for the first sergeant to be given the entire first seat to the right; the one opposite him on the left is left vacant. Numbers one and two,

front rank, take the seat in rear of first sergeant, and three and four the seat opposite, one and three nearest the windows, and so on. One seat on each side in the middle of the car is left vacant, and if there are more men than the car will hold, which should be determined in advance, the quartermaster will have arranged for their accommodation in the next adjoining cars, observing the principle given above, of keeping the men of the various units together. The second platoon is embarked in like manner at the rear end of the car, and the vacant seats are then filled by file-closers. Thus the various companies are in their proper order, and disembarkation can be effected at a moment's notice, so that the battalion will be formed and ready for action if need be.

The same principles will govern in the embarkation of the personnel of mounted troops.

EMBARKATION OF ANIMALS.

A cavalry command on arrival at the embarking point will be dismounted and told off, so many horses to a car. Having unsaddled and deposited accouterments at the spot selected, and in the same order in which the men stood in ranks, they will lead off from the most convenient flank, halting opposite the stock car designated and marked for the subdivision. A quiet horse is first led aboard, followed by the others in order. The car is thus loaded and immediately closed.

There is some question as to the advisability of tying horses so loaded, which we will not discuss here. The general practice is not to tie and to load the cars as full as possible—the closer the horses stand the better. Their heads should be turned away from the sister track if the road is double, to prevent the animals from being frightened, and they should all face in the same direction for convenience in feeding.

It is not considered advisable to leave hay or straw among the animals, but if forage is carried it should be loaded in freight cars or baggage cars next following the stock cars, and with a suitable guard of men. Whether the forage is carried or not, there is always a stable guard in proper proximity to the horses, whose duty it is to attend to them on the journey.

When the horses of a subdivision are loaded the men proceed at once to the spot where the acouterments were left, which they resume and fall in, when the saddles will be loaded on the car designated, after which the command enters the cars set apart for the men. Horse equipments are usually tied up in the horse blankets when the latter are worn.

Mounted men are to remember the number and location of the car where their horses are loaded, and they are to always fall in at this point when ordered to disembark.

The embarkation and disembarkation of the officers' horses is carried on at the same time as those of the men.

When these arrangements are properly carried out, it should not take half an hour to embark a cavalry battalion.

The same rules apply to artillery horses and draught animals, although the tactical formations of the former differ, of course, which will suggest themselves to officers of that arm.

If platforms or stock shutes are not available, portable ramps must be contrived, by means of which the animals are loaded from the ground. These may be made of planks twelve feet long and two to three inches thick, depending upon the kind of lumber used. The ramp should be about four feet wide, and the planks firmly fastened together with transverse battens. A strong

trestle or crib-work of logs supports the end next to the car, while the other rests upon the ground, and is secured from slipping by strong stakes. Three or four posts of suitable height are set in the ground on each side the ramp, to which suitable side rails are nailed or lashed.

In this case the cars are brought up in succession, loaded, and pushed on. In the field, if no means of disembarking are known to be at hand, material should always be carried for making ramps. In some foreign services these ramps are kept in store by railways under military control that are not otherwise equipped.

EMBARKATION OF MATERIAL.

A battery arriving at the embarking point is formed at a convenient place and the drivers and cannoneers dismounted. The horses are unhitched, unharnessed and loaded, as already indicated for cavalry. In this operation the cannoneers assist the drivers, and when done all proceed to load on the battery. Harness is loaded, tied up in the harness-bags, in the same manner as the cavalry saddles.

In loading guns, freight platforms are to be used, if practicable; if not, four skids, say fourteen to sixteen feet long, made of two or three inch by six inch lumber, must be had, which must be placed two and two, one end on the car, either at its end or side, the former preferred, and the other on the ground, where they are secured from slipping by stakes, and at such intervals apart that they will meet the tread of the wheels fully. If a side gangway only is available, a spare car should be had, on which the carriages are first run and then transferred to their own cars by means of planks laid from one car to the other.

The guns and caissons being unlimbered, and the spare wheels removed, are then run up this ramp on

the car. "First the rear train of a caisson, its stock to the rear, is run to the front end of the car and the stock rested on the floor; another rear-train is then run on until its wheels strike or overlap those of the first, when its stock is rested on the floor; a limber is then placed on the car with its pole to the front, resting on the rear train; the second limber is backed on and its pole held up until a gun is run under it trail foremost; the trail of the gun is rested on the floor and the limber pole on the gun carriage; the other gun is run on in the same manner and its trail rested on the floor under the first gun; a limber is next run on, its pole rested on the last gun; the remaining limber is run on with its pole under the preceding limber." This last is accomplished with the thirty-two-foot car, but with the twenty-eight-foot care there is not room.

The next car is loaded in like manner as the first, and the two spare limbers are taken on the third car, when it is a case of using the twenty-eight-foot car.

All carriages are pushed as close together as possible, and, after stowing the spare wheels, are lashed steady, the wheels of the standing carriages being chocked by nailing cleats to the floor of the car. Where parts are likely to chafe, they must be protected by binding on pieces of grain sacks.

The third car-load is completed by the battery wagon, together with the transportation wagon, which should always accompany the battery. This usually is what is known as a "two and four-horse wagon" and is supplied by the quartermaster's department.

Transportation wagons are loaded like artillery carriages when they accompany troops; otherwise they are taken apart and transported like other stores—that is to say, according to their classification as merchandise.

III.—The Journey.

The trains are finally made up and dispatched under the direction of the master of transportation of the railway (proper understanding with the quartermaster's department being concluded as to military requirements), and line officers should always work in harmony with the railway authorities, never on any account, except in the exigencies of war interfering with the running of the trains.

In making the time-table the rate of speed must essentially be slow, say eighteen or twenty miles an hour, so that time lost by small accidents, etc., may be made up by increasing it for short distances, and thus avoid disturbing the whole system. Still the speed should not, as a rule, exceed twenty-five miles, especially with heavy trains or mounted troops. With infantry alone, however, the speed may reach thirty-five to forty miles when absolutely necessary.

There should be short halts of ten or fifteen minutes every three or four hours, and a halt for about an hour in every six or eight, according to circumstances—the latter for feeding men and animals. All these halts have to be calculated for and the points determined where they are to take place.

For halts where it is intended to feed, plenty of siding, good platform accommodation, and a good supply of water are of the first importance. Then, too, the arrangements for feeding the men are to be considered, such as great military cooking establishments, etc. In war, or in large movements of troops, there would be a military commandant at such stations, and his authority should be supreme there, whatever his rank; but ordinarily, and in peace especially, the wants of the troops can easily be met by telegraphing ahead for such things as

hot coffee, etc., the men having been already supplied upon starting with the "travel ration." This last would very likely be the mode of procedure in the case in hand, but it must be looked upon as a peace method. (For the travel ration see Par. 1380, Army Regulations.)

Except where the journey is to be continued beyond eighteen or twenty hours, the contingency of fully feeding animals is practically set aside; but where grain is fed, the nose-bags are used, while hay may be easily fed during the shorter halts. Watering consumes much time, as each animal has to be watered from a bucket; hence the necessity of providing facilities already hinted at, and these will suggest themselves at any American railway station to a practical officer.

Horses should never be compelled to remain aboard cars longer than three or four days, and if the journey exceeds that period they should be unloaded and given a short respite. It may be added that they should be properly groomed and cooled before loading.

Much the same is true as regards the men, and on long journeys advantage should be taken of the halts and a system adopted so that they may have proper opportunities for getting out of the cars for the purpose of "stretching their legs," if nothing more. It has already been said that each car should be placed in charge of a lieutenant; but this fact does not absolve the captains and field officers from a lively interest in knowing that all is correct.

If, through any carelessness, every one is not on the train at the exact moment for starting, the train must not be delayed. This last would never be countenanced in war, where a military commandant of the station is present, and in peace it is a sure source of trouble with the railway officials, and justly so.

Sometimes troops have to be moved into localities

that are infested with strikers, rioters, etc. This was the case during the railway riots in 1877, and to prevent accidents to the trains, it was the practice to precede them by a "pilot engine," upon which was an officer and a suitable guard of men. This engine was run so as to always be within signalling distance to the train, and when nearing the enemy's vicinity all proceeded at a very slow rate. With the leading train or section of train was also a telegraph operator (or an officer or instructed soldier was utilized), who carried a pocket telegraph relay with a sufficient length of insulated wire to connect with the railway line. To these precautions might very properly be added a suitable working party, to be told off from the troops in default of a regularly organized railway corps, to repair damages, the necessary tools, etc., being carried on the train, with a railway official to assist by his experience and advice.

These or similar precautions should be taken whenever there is cause for expecting opposition of this nature.

IV.—The Disembarkation.

This is quite similar to the embarkation in its arrangements. It is fundamentally necessary, in large movements especially, that no block should occur at the station of arrival any more than at that of departure, for disorder and serious accidents are the product of such an unmilitary situation; consequently it is an imperative duty to get baggage and stores out of the way at once and leave room for other commands that may be following; indeed, if your command is alone, this is a case where your room is better than your company.

The infantry, after telling off men enough to assist with the baggage, etc., will at once march clear of the station or landing place and halt in assembly formation at the nearest available open space in the route to be

taken up. No straggling or absence from the ranks is to be tolerated on any account. If the baggage-wagons are to accompany the command, the march will be resumed upon their arrival; but if not (and this is the fact in the case in hand, because the troops are bound for a rendezvous camp close by) the main body need not halt at all, but proceed directly to camp, leaving the baggage to follow.

When the train halts, the officers will get out first and then the men, who will fall in immediately, slinging knapsacks, etc., at command after landing. As has already been said in reference to the embarkation, infantry, if properly embarked, will be in proper formation upon disembarking and ready for further movement.

Cavalry and artillery will be marched to some convenient spot where arms and equipments may be left, whereupon the men will proceed to unload the animals, material, etc. After arranging the gangways, the doors of the stock cars will be opened and the horse immediately opposite the entrance is to be led or backed out by the man to whom it belongs, the other horses, right and left, following in turn. The artillery will then unload the guns, a process which I feel warranted in the belief will need no description. The troops will then be formed in the most convenient place and the horses held until the men resume arms and equipments.

With cavalry and artillery the journey should, as a rule, be so timed that the arrival at the disembarking point will take place at least two hours before dark in the evening, or not earlier than an hour before daybreak. A night arrival for mounted troops means standing to horse until daylight. Infantry is more independent in this regard.

In the case of arrival in insurgent districts it may be well to disembark at some distance from the station

and march the troops there so, as to be prepared for emergencies, for fire action may be necessary, and then it becomes a tactical question. This mode of procedure would be determined by what might be reported from the pilot engine.

V.—The March after Disembarkation.

It is absolutely necessary that troops should leave the station at once after arrival, for reasons already given; yet to move them any distance, especially where there is no room of any consequence, is a difficult matter. During summer and in fine weather it is easy to provide for the bivouac of arriving toops, but this is by no means the case in winter or in bad weather. All will depend upon the nature and object of the operation in progress and the locality of the disembarking point; so that little else can be given here than general remarks.

In war, as a general rule, divisions, or at least each brigade, would be collected together within a few miles of the station so that such grand units should march complete to the general rendezvous or point of concentration. The actual method of doing this is a matter to be determined on the spot by the commanding general, and I should quite exceed the limits of my subject if I attempted to tell the duties consequent thereupon or those after an arrival in camp.

We might very properly terminate this study at this point, except for the schedule of your commanding general, for I have followed the subject at some length and have traversed it with more or less detail, because it is one of direct interest to you under the hypothesis that has been given. To enter now upon a discussion of sea transportation, which is, of course, a natural part of it, would, I am satisfied, be tiresome and con-

sequently of little value. The topic is, moreover, a special one and has been the subject of deep concern with many of the maritime powers of the world having possessions that must perforce be reached by such means, and has resulted in the adoption by them of more or less elaborate systems devoted to this special service; but the United States has had but little or no use for such a service, and we may therefore pass it.

The water transportation that you may be liable to experience would be the ordinary river lines of steamboats and the ferries, involving journeys of simply a temporary character, in which the same rules we have become familiar with above would have general application, so that I feel it to be unfair to tax your attention longer.

LECTURE NO. 2.

BY CAPTAIN WILLIAM BAIRD, SIXTH CAVALRY, U. S. ARMY.

Camps; camp cooking; correspondence and returns; duties of staff officers.

As you doubtless know from the published outline of this course, we are to discuss this evening, camps, camp cooking, correspondence and returns, and duties of staff officers.

It will not be my attempt, nor would time permit, to define all the fixed rules and orders relating to these subjects. They are to be found in the regulations, drill books, and manuals of the army. If you are ambitious, and interested in your work, you will carefully and intelligently study these. I mean by "intelligently," that if you have not much time concentrate what you have on those parts of these books that relate to the duties of your particular rank or position.

Let me try in a few words to help you in your efforts by touching upon some points *most likely* to come up on going into the field, so that you may know what essentials should be studied beforehand, and thus be able, when actually called out, *to decide correctly and act promptly* upon whatever comes up.

Let us follow out the hypothesis given us: That the militia has been called out for three months, and, as was explained in the last lecture, properly equipped, and duly mustered into the service of the United States, and started by rail for the place selected for the camp of

rendezvous and instruction. Our train carrying the regiment is nearing its destination. Now for camp!

Arrangement of details as to which men shall tent together should be made on the cars before arrival, and, as far as possible, should be allowed to be a matter of selection; cooks and other special duty men, however, should not be allowed to tent together, but should be distributed, so that their tent-mates can attend to putting up the tent while they are engaged in their special duties.

If the train arrives late in the afternoon and it is cold or raining, the commanding officer will be wise to keep his men on the cars till morning, as there is nothing more discouraging, especially for raw troops, than going into camp after dark, and in the rain or snow every one is uncomfortable, things are topsy-turvy, and the expense of holding the cars a few hours longer will be more than made up by the better results obtained in the end.

A large proportion of the members of the command have probably served in one or more annual militia encampments, so that it may be fairly assumed that all officers and non-commissioned officers ought to be able to direct the men how to "make camp" without difficulty or delay. Matters will work more smoothly, however, if companies have been practiced in tent-pitching. This can be done occasionally on moonlight evenings instead of a drill in the armory. It will be a change, and will interest your men. If tents enough for an entire company are not available during these "piping times of peace," certainly a few could be kept at some armory adjacent to a park or vacant lot, so that they could be carried to the ground and returned again by the company designated for tent-pitching that evening, and no expense for wagons to haul the camp equipage be involved. A small cord knotted at the

proper distances to show intervals between the front pole of each tent, and with a sufficient number of knots for the tents of the company, can be carried by each company. Then, having arrived on the ground, as soon as the direction of the company street is indicated, a pin is driven at each knot, the line being stretched "taut." This pin is just where the front pole will stand, and is the pin to which the front flaps are fastened when closed down. This avoids pacing and measuring when you go into camp and saves time.

A method of pitching tents to insure uniformity and rapidity has been so well prescribed in the published orders of your own command that I cannot do better than insert it here:

CIRCULAR No. 11. HEADQUARTERS DIST. OF COLUMBIA MILITIA, *Washington, D. C., July* 13, 1889.

The following manual for pitching and striking tents is published for the information and guidance of the National Guard:

COMMON TENT.

1. *Required:* Two upright poles and one ridge pole, twenty-four 16-inch pins, and two hatchets.

To Pitch the Tent.

2. *With four men,* designated alternately odd or even numbers.

a. The even numbers, one at each end, place the ridge pole in the ridge of the tent. Each odd number inserts the iron spindle of an upright in the corresponding hole of the ridge pole and, assisted by an even number, thrusts it through the grommet in his end of the ridge of the tent.

b. The odd numbers at the uprights, assisted by the even numbers, raise the tent into position, taking care to place the front upright on the established line and the other on a line perpendicular thereto at this point, both poles vertical.

c. The odd numbers maintain the uprights vertical until the corner eave-lines are attached to their pins. The even numbers make fast the door, and while one drives a pin against the front

of the front pole and hooks into its notch both of the foot-stops or loops of the middle seams in the door of the tent, the other performs the same operation against the rear pole for the single foot-stop in the middle seam of the rear face of the tent.

d. The pins for the corner foot-stops are next driven in a similar manner, by the even numbers, first for the front corners and then for the rear corners, being careful to drive the front pins on the established line and preserve the rectangular outline of the tent.

e. The even numbers similarly drive the pins for the corner eave-lines, at points four times as far to the right or left as to the front or rear, tightening the lines by means of the metallic slips, the conditions being that the eave-lines shall preserve the direction of the roof-pitch and the walls remain vertical.

f. The tent will now stand alone. The odd numbers drive pins through the remaining foot-stops, aligning them upon adjacent corners. The even numbers drive pins for the remaining eave-lines in the prolongation of the roof seams to which they are attached, tightening them as before.

The notches of all tent pins will be turned outward; foot-stop pins will also incline slightly in the same direction, and those of the eave-lines will be nearly perpendicular to them.

When properly pitched the tent will not wrinkle or sag.

With fewer men the same principles will govern.

If the poles are too long, they will be sunk in the ground sufficiently, not cut off.

To Strike the Tent.

3. One hour after "The General," *attention* will be sounded, immediately subsequent to which tents will be struck by three drum taps or trumpet notes.

At the first signal all the foot-stops and eave-lines will be detached from their pins except the four corner eave-lines;

At the second signal the odd numbers stand by the uprights, the even numbers detach the right flank eave-lines from their pins, and all hands maintain the tent in position;

At the third signal the tents will be lowered simultaneously toward the left flank.

With fewer men the same principles will govern.

After lowering, every tent will be neatly folded with its pins inside and placed upon its floor or former site.

WALL TENT.

4. *Required:* Two upright poles and one ridge pole, ten 24-inch double-notched and eighteen 10-inch pins, two hatchets, and one large mallet or axe.

5. The operation of pitching is similar to that already described for the common tent, with the following differences:

a. The spindles are likewise thrust through the corresponding grommets in the fly.

b. The fly is raised with the tent.

c. Same.

d. Same.

e. The lower notches are employed for the eave-lines of the tent, the upper for those of the fly, which are attached last. The even numbers work at the same pins—one holding, the other driving.

f. Same.

HOSPITAL TENT.

6. Same as for the wall tent, with the following differences: This tent requires eighteen 26-inch double-notched pins and twenty-eight 16-inch pins.

7. The operation of striking both wall and hospital tents is similar to that described for the common tent.

By command of Brigadier General Ordway:

H. R. LEMLY, *Lieutenant Colonel,*
Acting Adjutant General.

Rules for laying out a camp are given minutely in the Army Regulations and in the drill books. Practically, however, camping on a green sward, as level as a billiard table, is seldom possible and these rules are rarely adhered to.

The colonel receives orders to "put the regiment in camp" in a certain locality. He takes his staff and rapidly rides to and over the ground while the troops are disembarking. He may direct the next officer in command to march the regiment to the ground when ready, so as to give his entire time to the choice of the camp, or he may send an officer to select the ground

and remain with the regiment himself to superintend its disembarkation. In either case everything should be decided upon by the time the regiment arrives at the camping ground, so that every one is directed *at once* to the place he is to occupy.

In selecting the ground, don't sacrifice comfort to get precision! A little greater or less interval between two companies, or a slight deviation from a right angle, which avoids putting one or both companies on rough, broken, or damp ground, is better than mathematical accuracy, and will make men more contented and comfortable and healthy.

Wood, water, and grass are the essentials for a good camp.

To camp near woods is always an advantage; besides reducing the labor of getting fuel, men can readily make "shades," arbors, rustic bridges over wet places, &c. Stakes can be cut and handy beds made to keep men off the ground. Pick up the empty flour, coffee, or grain sacks, which soon accumulate, cut them into strips, interlace them over a frame of a few pieces of sapling driven in the ground, and you have a good bed; besides it gives more room, as things can be stowed underneath. Rig up a piece of rope under the ridge pole to hang things on. Company officers should *insist* on these points. With a few pieces of board picked up from empty boxes, some men will make almost a set of furniture for their tent. Look through the camp daily for such "wrinkles," and when you see a good idea, try it in your own company. Make your lazy, careless men go and "*look*," and then "*imitate*."

CAMP DISEASES.

Rules and suggestions for avoiding camp diseases you will find in your Soldiers' Hand Book, a copy of which

is issued to each man. In permanent camps the plague of soldiers is chronic dysentery, especially with troops fresh from home comforts. This is easily cured by marching and campaigning, even when medicines have failed in your permanent camp. A little stimulant is sometimes good for this trouble. Above all, "keep your feet dry if you can."

CAMP COOKING.

Rules and directions for camp cooking are given in the "Manual for Army Cooks." Captains should "study these beforehand," but don't expect a man who has never cooked before to succeed very well by reading a book. As soon as there is a prospect of field service, look through your company for cooks. A man who has hunted and fished will have done some camp cooking; put him on your list of availables. "Hustle" around and enlist one or two men as cooks. Try to get men who have worked on boats, tugs, sailing vessels, or for gangs of laborers. They will have more expedients at their fingers' ends, and get along with few conveniences where fine house cooks would be helpless. In a company or regiment there are always men who can turn their hand to almost anything. It is for you to find out the right man for the right place. If you have an intelligent, reliable man who has been in the grocery, market, or restaurant business, put him in charge of your rations and their issue, of course superintending him yourself and requiring him to follow the regulations. The army ration is liberal and sufficient, but great improvements may be made by saving certain parts at times and selling or trading them for other articles, and thus giving variety to the bill of fare. Cooks should be paid extra from the company fund. This fund arises from the economical use of the rations; hence, if the

cooks waste or spoil, even though *unintentionally*, their extra pay should be cut off. Two cooks generally to a company. Use, to assist them if necessary, daily or weekly details of privates as cooks' police. In starting out with no company fund on hand it would be well to try and get all the men to "chip in" and make a fund, to be used in adding little extras to the rations. All the accounts and transactions relating to this fund must be posted or kept so that *every man can see them.* Where the camp is permanent and there is no probability of a single company being detached, there are advantages in having more than one company mess together. For instance, an exceptionally expert cook and economical manager could be put in as chief cook, with the best cooks selected from the regiment as assistants, irrespective of companies; thus the benefit of his skill would not be confined to his own company; but if your company were then suddenly detached, you would find yourself having to begin all over again to hunt up a cook. So it is generally best in the field for each company to do its own cooking. The officers of the regiment in a permanent camp of rendezvous should mess together. It "promotes *esprit*, encourages cordiality, and the regiment will work together better." It enables the colonel, who should preside, to quietly check any ungentlemanly or boyish tricks and jokes that thoughtless officers might indulge in because in the field and away from home; besides, it reduces the amount of mess furniture and expense.

Remember, though, that a camp of instruction means instruction for active marching and campaign. Companies and battalions will then be frequently detached, so the company officers should all have a simple and inexpensive mess outfit always ready.

If you have succeeded in getting your company mess

to run satisfactorily, then on the march "mess with your company." I mean, let each officer pay into the company fund the cost of a ration. Each officer should have his own meat-ration can, quart cup, knife, fork, and spoon; then your meals are brought to your tent or where you bivouac hot from the company fire or "company cook-house," as it is called in the regular army, although all signs of a "house" are conspicuous by their absence. One servant can attend to a half a dozen officers in this way and keep their outfit clean. If you have no servant, one of the privates detailed as cooks' police for the day should run over with your meal. Go to the cook-house to inspect; stand there to supervise while the men are coming up in turn to get their meals, but eat your own meal at your tent or where your blankets are spread. Don't have, or allow your officers when messing with the company to have, any "extras." If you want extras, let your own servant attend to that. You won't often get them when on the march, and it will help discipline and stop grumbling, especially when rations are scant, if your men feel that their officers are taking cheerfully the same fare as themselves.

CORRESPONDENCE AND RETURNS.

The returns and correspondence required from troops in service are considered terrible for beginners to learn, but they are all explained in regulations, and a zealous officer will learn them as well as his drill. An ambitious captain should to-day look over his list for a company clerk, just as for a company cook. He finds that A is an expert accountant in a bank; B is a reporter; C is a book-keeper, &c. Give them the necessary blank forms—you can get them all from the War Department, and each blank contains full directions. Tell

them to study up the matter at odd times. To such men it would be mere child's play to become thoroughly familiar with the ordinary routine of military papers. And then were you suddenly called into service you would have merely to *supervise* the clerical work and give full time to other matters.

A company clerk should be excused from guard duty; he will have plenty to do. He assists the first sergeant in keeping lists and tallies and rosters. He tents with the first sergeant—indeed, is almost as important as the company cook. The first sergeant is constantly occupied with outside duties; if he is a man of good judgment and tact in managing men in a quiet way and inspiring them with respect for his fairness in matters of details and duties, you cannot expect him to do all the "paper work." But hark! the call for drill is sounding; the first sergeant rushes to his tent at the last minute to put on his belt and get his rifle. He has been "on the jump" all day, quieting the grumbling of the cook, who says that A company got all good meat and we of B got the bones when the beef was divided. He has been all "worked up" over what seems like excessive details on the company from headquarters and been talking to the sergeant-major about it; has been listening to the "tale of woe" of a poor unfortunate who wants to get the captain to put him in another tent in which are his intimate friends. Breathless he rushes out to form the company; the roll he has learned by heart. What memories it will bring up in after years to him, and those who hear it daily, of comrades who long since have ceased to answer "here;" but he hasn't had time to look up what men are properly absent on guard, detached service, sick, excused, &c. It is the company clerk who hands him the list as he himself hurries out to "fall in." Now a differ-

ent list may be necessary half a dozen times a day. Orders may be received at any minute for a detail of "so many men" to be sent to unload wagons, cut wood, &c., or the thousand and one things that arise. There is nothing makes men so discontented as an idea that they are detailed out of turn. The first sergeant is the man responsible for all such rosters of the men; but to make it run smoothly you need an efficient company clerk. There are as many matters come up in the company office—that is, first sergeant's tent—as in the office of a hotel. Jones brings back his boots that were issued this morning; "too small;" company clerk notes it and will tell first sergeant who will have exchange made. Brown wants a furlough; clerk notes it and will make up the blank and have ready for first sergeant to present to captain next morning. Robinson taken sick on guard; word sent for another man to replace him; first sergeant is out superintending the cleaning of the grounds; company clerk notifies supernumerary, who reports at guard-house, and at the same time notes in a memorandum book or on a blotter that Robinson has gone from "duty" to "sick." This will go in on the morning report to-morrow. In short, the idea I wish to convey is that the clerical work of a company can and should be learned in time of peace as much as the drill, and if learned by a few selected men, who can act as company clerks, will enable the captain and his officers and non-commissioned officers to give their time to what we go into camp for, viz., teaching men how to care for themselves, march, and fight. A non-commissioned officer may be a company clerk, but it reduces their number for duty.

Every article of Government property received is charged to you as captain; hence the importance of keeping track of them and having your returns correct,

so that when mustered out you won't have a "stoppage" of your pay. Property returns are generally quarterly, and are simple enough but *lengthy*. If you make them up yourself you will lose time which you could better devote to your company. If you have carried out the plan proposed, you will have nothing to do but verify and sign your returns; your clerks and assistants will have been taught.

Besides the returns of property, the reports showing the *exact state of your company or regiment from day to day you can't be too careful* with. Cases of pension may arise years afterward in which carelessness in keeping the morning report on a single day may either defraud the Government or, on the other hand, may keep the heirs of a faithful soldier from receiving the benefits of his service.

I have referred you to the army regulations and to standing orders for instruction in the forms of correspondence and returns. Blank forms for returns generally have printed on them specific instructions for making them. As a matter of convenient reference for you I insert the following brief compilation of the regulations governing correspondence:

1. Official communications will be written on letter or cap paper, with a margin of one inch on left-hand side of each page. Each letter will refer to one subject only. Whenever more than one page of a half sheet, or more than three pages of a full sheet, are required for the communication, the necessary additional sheet or sheets will be added, so that the last or outer page may be left entirely blank for briefing, &c.

2. A communication from an inferior to a superior should be signed by the inferior; but a communication from a superior to an inferior may be signed by a staff officer, by order of the superior.

3. A communication from an inferior to a commanding officer

superior to him in rank should be addressed, not to such officer, but to his adjutant, as, for example:

The ADJUTANT *1st Battalion D. C. N. G.*

SIR:

The ADJUTANT GENERAL
Of the District of Columbia.

SIR:

If sent by mail, the envelope may be addressed to the officer by name.

4. A communication from a superior to a subordinate officer, when relating to the command of such subordinate, should not be addressed to him by name but to his official position, as, for example:

The COMMANDING OFFICER
Company A, 1st Battalion D. C. N. G.

SIR:

If sent by mail, the envelope may be addressed to the officer by name.

5. A communication from a superior to a subordinate officer, when relating to such officer individually and not to his command, should be addressed to him by his name and grade, as, for example:

Captain A——B——,
Company A, 1st Battalion D. C. N. G.

SIR:

6. All communications, whether from a subordinate to a superior, or *vice versa*, must pass through the intermediate commanders, who will indorse thereon such action, remarks, or information as they may deem proper and forward without delay.

7. All letters will commence, after the address, with the word *Sir*, not *General*, *Colonel*, *Captain*, &c. In signing an official communication, the rank and corps will follow the signature.

8. All official communications will be marked on the envelope *Official Business*, in right hand upper corner.

9. Letter-paper will be folded in three, cap-paper in four equal folds, parallel with the writing. The first fold, which is the top of the paper, is used exclusively for a brief statement of the communication, the office marks, and noting inclosures. In-

dorsements commence at top of the second fold; will be numbered and follow each other in regular order of date on successive folds, leaving room after each for office marks. Additional space for indorsements will be provided by pasting slips on the edge of the last fold to turn back like the leaves of a book.

10. All inclosures are numbered, and bear the proper office marks. Inclosures of the original communication are noted on the first fold, just below the brief. Inclosures accompanying an indorsement are noted at the foot of such indorsement, and also on the first fold of the original communication, and to the latter notation is added the number of the indorsement to which they belong, thus: *Two inclosures—Fifth indorsement.* Inclosures to indorsements are numbered in the same series as those to the original communication, and the number of the indorsement to which they belong is added below.

11. The brief of a communication should exhibit the place and date of writing, name or official position of writer, and a synopsis of contents, each separated by cross rulings in red ink. Space should be left above the briefing for office marks, and below the briefing for noting the dates of receipt at each headquarters. All notations should be in red ink, and successive indorsements should be separated by cross-rulings in red ink.

12. Indorsements forwarding communications to superior officers will be signed by the commanding officer forwarding them. Indorsements returning communications to subordinate officers will be signed by a staff officer by order of the commanding officer returning them.

DUTIES OF STAFF OFFICERS.

Their duties are fully set forth in the books I have referred to, and can be easily learned before going into the field. To try to enumerate them would exceed our time. Let me touch upon some points as to the *manner* and *spirit* of performing said duties. The adjutant is the mouth-piece of the commanding officer, the chief of his military family, which consists of the remaining staff officers. He should keep himself always in perfect accord with his chief. If the commander of the regiment is relieved, the adjutant should tender to the new commander his resignation as adjutant, so that the latter

may be free to select from among the lieutenants whom he prefers. If the new colonel accepts his resignation and appoints another adjutant, it is not a reflection upon the manner in which the former has performed his duty; simply this, the relationship between a commander and his adjutant is so close, their affairs so confidential, that the former should have fullest opportunity of selecting the person he desires. All the other officers simply obey orders, unless their advice is asked for. The adjutant is called on to interpret and frame into orders and commands the wishes of his chief. Others can obey implicitly and promptly, even when they think the commander wrong. If the adjutant, however, cannot conscientiously adopt and explain the views of his chief, he should ask to be relieved and returned to company duty. The duties of a regimental adjutant are very exacting and continuous; there is not a moment from reveille to taps that some one is not likely to come to him to report something or other, and from taps to reveille people won't hesitate to come to the adjutant's tent with some trifling matter over which they would think twice before venturing to disturb the colonel's slumbers. A good adjutant will try to harmonize difficulties between officers of the regiment, to foster regimental *esprit* and pride, break up cliques and factions, report to the colonel any official matter the latter should know, but avoid letting any officer have cause to feel that he takes advantage of his confidential relation with the colonel to prejudice him in any way. As the adjutant is responsible for all the rosters and details, he should be known to be perfectly "fair and square" and capable of running these correctly. All company returns, except such as relate to property, come to the adjutant. He needs an efficient sergeant-major and a couple of privates on special duty as clerks. As in the case of the company clerk, the adjutant should have selected these long before and

started them in to learn the blanks and forms used, which can be easily done. These regimental clerks are detailed from any of the companies; they remain at headquarters, even if the company is detached; they are excused from guard, and at end of the month, when the paper work is rushed, they are excused from even drills and inspections. The sergeant-major makes the details of the number of men from each company daily for guard or other service, the adjutant being only called on to decide when a first sergeant thinks that the detail from his company is wrong. If the first sergeant is not satisfied with the adjutant's decision, which should be made *at once*, he will speak of it to his captain, and the latter will see the adjutant or send a letter to him, which is presented next morning to the colonel. Then if he decides that the detail was unjust, allowance will be made on the next detail. The rule is "obey orders first and get redress afterwards." The rosters are so simple, however, that the adjutant or sergeant-major should always be able to give reasons for the detail, or if wrong correct it *at once*.

The quartermaster generally performs also the duties of acting commissary in the regular service. I think it would be better for militia to have an officer for each position; there is plenty of work for both. To say what a quartermaster, *even if at a camp with a single company*, may have to *do*, or to *contract for*, or to *build*, might fill a volume. At a permanent camp there would probably be an officer of the regular army to issue to the quartermaster of each organization of the militia, and to explain blanks and forms and methods. You will need men detailed as clerks, and non-commissioned officers in charge of forage, teams, property, &c. In addition to the accuracy required by the adjutant's subordinates, yours must be strictly honest and trustworthy or you will find yourself "short" and with no

way of accounting for losses; hence the necessity of selecting and training beforehand men of intelligence on whom you can rely. The colonel should be extremely careful in the selection of his quartermaster. Scrupulous integrity and great business capacity are needed. A knowledge of tactics and drills is not essential. An officer who is so fearful of responsibility that he won't issue a horseshoe for a lame animal promptly and get the "papers" fixed up afterwards will annoy a command and be a failure, though he always follows regulations. On the other hand, to deviate from the prescribed methods may get you into trouble about your accounts, even if you have really saved money to the Government, in leaving the "beaten track" of routine. Quartermasters of large commands during the civil war had whole trains of cars, or steamboats, charged up against them by the accounting officers in the Treasury for months and years on account of the omissions of some technicality. Until you attain great reputation, it is better to be cautious and avoid this.

The commissary papers are simpler than those in the quartermaster department; the clerical work is, however, considerable, and should be learned beforehand by your assistants. The commissary should run the officers' mess, and if several companies mess together he might supervise the cooks and cooking. The Commissary Department of the United States Army will supply ovens and material for baking bread.

What I have said in this lecture applies chiefly to foot troops. As the number of mounted troops in the militia will generally be small I will say nothing about the special features that apply to their camps, camp duties, &c., for fear that if I got started on that subject I would not know when to stop. I will only repeat the axiom, "Look out for your horse first, and yourself afterwards, or sooner or later you will be afoot."

LECTURE NO. 3.

BY FIRST LIEUTENANT GEORGE P. SCRIVEN, SIGNAL CORPS, U. S. ARMY.

Discipline; drill and instruction; guard duty; skirmishing; fire discipline.

The lecture allotted to me assumes that you are still in a rendezvous camp, and being organized for active service, and I am requested to deal with certain subjects that should be the principal objects of your instruction to your respective commands during this time, in addition to the subjects that were treated of in the preceding lecture. The first and most essential object and subject of instruction should be to learn for yourselves and teach your men the necessity and reasons for

DISCIPLINE.

Without discipline and habits of obedience no man is fit to command, and a body of armed men becomes a mob whose power is dissipated in fruitless individual effort—a mere rope of sand, without coherence and without strength.

In order to be effective, each part of a command, like each piece of a locomotive, must do its work instantly and without friction, or the machine is useless.

Discipline, among men who work together for any purpose, means simply the fitting of each individual man into the great general whole, and this fitting in of the parts is as much the result of careful work on the man as on the metal which is filed into shape. Great

generals, like great poets, are perhaps born, not made; but the working men of an army, the men who constitute the finished instrument which the master hand wields, are made, and made, moreover, by hard work, long experience, and the familiarity with detail which such experience gives.

Discipline in an army depends, of course, upon those in authority; but more upon junior and non-commissioned officers than upon officers of higher grades, whose time and energies should be taken up by other matters. It is hardly too much to say that upon the captains and first sergeants of a command, no matter how large, depends the discipline of the troops. A good captain will have good non-commissioned officers, and a good first sergeant will carry out the ideas of his captain and will instill into other non-commissioned officers and into the privates, especially into the new men as they join, those notions of obedience and respect for authority which make good soldiers.

In the armies of Europe habits of discipline and the unquestioning obedience of inferior to superior are matters of comparatively easy accomplishment, for class distinctions come strongly to the aid of military necessities. But in a republic, and especially among bodies of citizen soldiery, the distinctions of ordinary life have often the opposite tendency, and Private Jones, the great lawyer, may find himself under the command of Captain Smith, his clerk, and the distinguished private may not be inclined to give to his captain that unhesitating and unquestioning obedience which is characteristic of the good soldier.

The first lesson to be learned by the soldier is to separate the *rank from the man;* then obedience becomes easy, and all ideas of personal relations and personal feelings disappear.

It must be remembered by every soldier, from the cook's assistant to the General in command, that he has a superior; and that every man who wears a uniform is the servant of his government, bound by his oath to obey properly constituted authority.

A soldier's first duty is to obey. Obey without question all legal orders of proper authority, no matter how unjust they may appear to you. Obey, and protest afterwards, if upon cool deliberation there is strong reason to do so; but never protest before obeying, and never refuse to obey unless an order is so manifestly and clearly illegal that you are justified in refusal by your own conscience and are sure of being justified by the court martial which will probably follow.

Never question, at the time, an order given by a superior who has authority to issue it; obey at once, but if you have doubts regarding the authority of the officer or the legality of the order, obtain the latter in writing, if possible; then obey without demur.

Regarding the system of selecting officers and non-commissioned officers of the National Guard, I have no comment to make; but a word in regard to the relations between officers and soldiers when the uniform is worn may not be out of place.

In the National Guard, officers as well as non-commissioned officers are appointed from individual considerations, and frequently the office is distinguished by the man; but often I have known the opposite to be the case, and have realized what very heavy shoulder-straps are sometimes needed to balance the head between them.

This is a grave mistake; an officer should never base his claim to dignity and respect merely on the commission which he holds.

Probably in no service in the world is the distinction between officers and men so difficult to maintain as in

the National Guard; yet few things are more important, for upon this distinction may depend in an emergency the safety of an entire command.

It is humiliating to humanity to admit that familiarity breeds contempt, but it is true—more true in military affairs than in others; and it is undoubtedly a fact that the unquestioning obedience which comes from respect is never compatible with the relations of companions.

Kinglake, if I remember correctly, attributes the stampede of the French troops in Paris during the events which preceded the *coup d'etat*, and the useless loss of life that then occurred, to the fact that many of the officers of the French army at that time had come from the ranks and were *merely* soldiers who wore the epaulet, not true officers; consequently when the time of trial came they were swayed by the emotions of the men in the ranks, and were swept away by the fears which seized *them*. The results were disastrous and mainly due, as Kinglake seems to think, to the lack of proper distinction between officers and men.

Some day you may have to stand before a mob, and then, I am sure, you will recognize the value of that instinctive reliance upon your officers which comes with habitual respect and which is lost by habitual familiarity.

In our own country, class distinctions do not exist as in Europe, and the dignity of an officer loses one of the strongest supports which it possesses in an aristocracy. It is all the more necessary, therefore, that the individual be carefully selected. Especially is this true in the National Guard, where the elevation of the officer is apt to depend largely upon his popularity, and the election of men who have the qualities of command is very greatly a matter of chance. This is an error, for there can be no doubt that the man

popular amongst others—what is known in fact as the good fellow—is not of the type of those who draw tightly the reigns of discipline and make good officers.

It is very certain that the famous Colonel Martinet would not have been long an officer of militia. When you choose officers, select rather the men in whom you recognize the qualities of the soldier than those in whom you see merely the traits of the good fellow, for upon your officers may some day depend your own life and the lives of your fellows; and those in authority should be capable, energetic, and earnest men.

When in uniform, the distinction between officers and men cannot be too carefully maintained, and all approaches to familiarity cannot be too promptly checked.

Men accustomed to respect their officers, to obey commands without question, and to rely upon the judgment of the officer on all ordinary occasions will do so on extraordinary occasions. Disaster and unnecessary bloodshed may be avoided by that unconscious and unreasoning obedience which comes with habitual respect for authority.

Whatever, therefore, may be the friendships and relations in private life between the officer, non-commissioned officer and private, when in uniform they should be forgotten and each rank should have no companionships and no friendships outside of its own class.

In return for the obedience and respect of his men, the officer will give his time and energies to them. He will care for their comfort rather than his own, and in every way in his power will guard the welfare of his command.

The next thing outlined for my lecture was to suggest to you points of

to which to devote yourselves in the short time you may remain in the rendezvous camp.

One of the best means of instilling into men habits of discipline, is by drill; and the only object, so far as I have been able to discover, of the numerous and complicated evolutions laid down in our drill books, especially in those of recent date, is to give a pleasing variety to drill evolutions in order that they may not weary the soldier. The really essential movements of troops are few and simple, and after the raw men have acquired habits of obedience, and care in matters of detail, the time in rendezvous camp may well be employed in matters of more importance.

The important matters are those which pertain to the care and comfort of the soldier in the field.

It is to be remembered that the losses to an army come from *disease* and not from the bullets of an enemy, and that whatever adds to the comfort of a command adds to its efficiency.

Good and ample food, adequate shelter, and sufficient clothing are the best weapons against an enemy. It is true that these essentials depend largely upon the supply departments; but without the proper use of the material provided, all the supplies in the world will not make men contented in the field. It is upon a knowledge of the thousand and one little devices of camp life, learned by experience, that the soldier's comfort and health depend.

Practical knowledge of camp life is gained only by experience, and it is in the rendezvous camp that the first lessons should be taught. Mechanical accuracy and clock-like precision of movement, which had their place in the earlier training of the recruit, should give way

to other and more essential matters, and the soldier should now be taught: first, how to care for himself and his own health; then how to care for his horse and weapons; afterwards the care of himself and his comrades against possible attack of the enemy.

As practical experience, however, is not always easy for the new Guardsman to obtain, a few hints may not come amiss to assist you in teaching your men how to care for themselves. Remembrance of the rule to always ditch the tent may save a wet bed and possible fever; and the ditch (but an inch or two deep) may be made in a few minutes with knife or bayonet, unless, indeed, the tent is pitched on rock.

No matter how tired you are, never sleep on the ground if straw, hay, grass, leaves, branches, rails, or even stones can be found to lift you above it. Blankets should be aired at the end of the day's march unless the sun has gone down. When camp is reached get everything under cover as quickly as possible, for blankets will absorb the moisture of the air and you will have a damp bed.

It may, perhaps, be well to suggest to commanding officers the old Western rule to push on over a muddy road as long as the rain is falling, for as soon as it stops the mud stiffens and travel becomes more difficult. Old travelers never camp on the near side of a creek or river, for the reason that the stream may rise in the night and cut them off. In any event, it is the part of wisdom to put an obstacle behind you, rather than to have it to face at the outset in the morning.

One suggestion I will venture, which, though apparently trivial, experience has taught me, is really a matter of considerable importance. It is upon making camp to relieve your cooks instantly of all work connected with pitching tents, unloading wagons, &c., and set them immediately at the work of lighting a fire

and preparing coffee. With practice, coffee may be ready in fifteen minutes after the camp ground is reached, and before the remainder of the company have finished caring for the animals, pitching tents, bringing out and airing blankets, &c., your cooks will have a cup of hot coffee ready for each man; and hot coffee is no mean comforter at the end of a long and perhaps wet and cold day's march. Coffee should be prepared before any attempts are made to cook the evening or mid-day meals.

The advisability of a noon halt on the march is doubtful, unless in a very hot country. I believe the best plan is to push on steadily, with, of course, frequent breathing spells, to the end of the day's march. However, it is a disputed point, and depends largely on circumstances; but whichever plan is adopted, little should be eaten or drunk until the night's camp is reached. On the march, my own experience has taught me that a light breakfast is best, reserving the heavy meal to the end of the day, and on the march the rule to drink little or no water should be observed—indeed, the less water that is taken in the field the better.

Bad water, or even good water to which the individual is unaccustomed, is dangerous, and the less taken the better. Rather than drink water which seems impure wait until the camp is reached and coffee or, better still, tea is made; but never forget the old soldier's rule, to fill the canteen at the last good water crossed; this simple rule may save you endless trouble, perhaps suffering.

Cold tea is an excellent drink in camp and on the march, but carried in the ordinary tin canteen becomes black and acrid from the acid. It must therefore be carried in bottles. Tea is probably the best drink on which to sustain prolonged exertion, unless chocolate, which is both food and drink, is preferred.

Alcohol is probably the worst drink that can be used; it should never be taken otherwise than sparingly and at times of great exhaustion and after exertion is over. Remember that as a preventive for cold, or as a means of warming the body, alcohol applied externally is as good or better than applied internally.

Hard as it may seem to pour whiskey into your boots, it is often better to do so on a cold or wet day, than to pour it into your stomach; though few soldiers would be convinced of such fact.

In regard to the selection of a camp ground, remember that the immediate presence of standing water and underbrush means insects; at the same time, wood and water must not be far away. Avoid sand as a bed as you would a bed of cactus, for white and yielding as sand appears, it makes the hardest bed in the world, forms a mold about the body, and in the morning you will feel as if put thro ugh a clothes-wringer. A ploughed field is likewise to be avo ided, and if you must sleep on the ground, stick to the bare earth—the barer the better.

One point further, and one which I believe to be of great importance to the health of a command—that is, never permit your men to sleep without shelter if it is possible to obtain it, no matter how hot the weather may be nor how dry the night. It is dangerous to do so in any country, and is particularly dangerous in the malarial regions of this section of the United States. Even in the dry climate of Texas I have known several deaths directly due to the fact that men had been permitted after a long, hot day's march to leave their tents in the wagons and to sleep uncovered. Nothing apparently could be more balmy and pleasant than a June evening in Texas, and to sleep in the open air was a delight to the men; but from the effects of a march only a few days in length, without hardship of any kind, two or three of the men of a small command died.

Young men are especially anxious to rough it, and to submit themselves to all sorts of unnecessary exposure, but an old campaigner takes all the comforts he can get and asks for more.

The new soldier in the rendezvous camp, having passed through the squad drill, should be taught the few simple rules needful for the care of his own health. Broadly these are: Keep your head cool and your feet warm and dry; drink as little water as possible, and no spirits (unless in very exceptional cases); never sleep on the ground if you can avoid it, and always under some shelter that will keep off the moisture of the night, if it be only a piece of canvas. In a fever country, when wet by rain or by perspiration, change your undergarments at once (every soldier should have one change), and never, day or night, no matter how tired, throw yourself down to sleep in wet clothes unless, indeed, it is impossible to obtain others; then you had better not go to sleep.

To such matters should, in my opinion, the instruction of new troops in the rendezvous camp be confined In addition there should be a few lessons in pitching tents, packing of outfits so as to economize space, and a little instruction in cooking over an open fire, the making of bread, and the use of the Dutch oven. These will, I believe, take up the larger part of time available for individual instruction, in addition to drills and the necessary guard duty.

GUARD DUTY.

Besides the instruction of the individual in matters relating to his own welfare in the field, the time in the rendezvous camp should be used to teach the men to care for themselves as a body. The very first lesson to be learned by a body of troops is that which enables the many to rest under the care of a few—in other words, the

lesson of guard duty. To the guard is entrusted the safety of the command, and therefore guard duty is the most responsible and most honorable duty of a soldier. The importance of this duty lies not alone in its material usefulness, but in its value as a school of instruction for teaching men habits of obedience and discipline, and putting them into positions of responsibility where individual intelligence and judgment must often have full play. A thorough knowledge of the duties of camp guards and sentinels is also essential as a preparation for instruction in grand guard and outpost duty. The Manual of Guard Duty issued from your own headquarters to every man in the command is so complete that it is unnecessary for me to do more than refer you to that for instruction.

Another essential subject of instruction to prepare your commands for field duty is

SKIRMISHING,

which should include instruction not only in the drill but in the bugle or whistle signals for giving commands, and instruction and practice in estimating distance, and in training the eye and brains to instantly perceive accidents of ground and circumstances that give shelter and advantage to a skirmish line. These points, and in addition the maneuvering of very long enveloping lines and their movements, can best be learned in the open field and in a broken country. The principles of skirmish drill can best, however, be taught to men in small bodies, and should have been taught to your men before you were called into the field. It can be taught on the city streets or on a vacant city lot as well as in the field.

The company may be sent up one street and down another, through alleys or the winding paths of any of the dozen parks of the city. Such movements would

correspond closely to those of detached companies during actual service; the training of officers would be useful and the lesson in maneuvering by sound of bugle or whistle might be useful. The captain who can handle his men by bugle or whistle when in dispersed order can certainly do so when in close order, and the freedom of individual action allowed in skirmishing is better training for the men than the clock-like movements commonly seen in companies of militia when on drill; but do not forget that the skirmish drill should not be taught until principles of discipline and obedience are thoroughly well inculcated, for on the skirmish line the necessary and valuable independent action permitted the soldier becomes with recruits dangerous license.

It has been demonstrated by experience that a whistle signal can be heard above the din of musketry firing a greater distance than a bugle signal, and for this reason the whistle has been adopted in the German, English, and other foreign armies for giving firing orders; for the same reason the whistle would seem more suited than the bugle for giving orders to a skirmish line. A still stronger reason for substituting the whistle for the bugle for skirmishing orders is that the first shot of the enemy may disable the bugler, or the officer who is able to sound the bugle, and then the whole line would be helpless unless there were enough competent officers or men to provide for successive casualties of that kind. As a matter of fact, comparatively few men can learn to blow the bugle, and it takes a very long time to teach men to distinguish commands given by the bugle. In your own experience you have found that you can learn to distinguish the several whistle signals in the course of two drills, and that anybody can learn to blow them. The system of whistle signals for skirmish drill issued from your own headquarters is the best that I have

seen; and as you have demonstrated its practicability it would be well if it could be adopted by the whole National Guard.

Possibly the most important thing in which you can instruct and exercise your men in the rendezvous camp will be in

FIRE DISCIPLINE,

which may be defined to be "the unhesitating habit, developed in the men by instruction and training, of commencing or ceasing or relaxing the fire, or of concentrating it upon a defined object, all in obedience to the deliberate will of the commander. No firing should ever be permitted without orders, and it should cease immediately the command is given for it to cease."

Although Napoleon said "Fire is everything, the rest is of small account," yet fire tactics and fire discipline to enforce them are developments of modern warfare. The great distance at which the fire of modern rifles is effective and the enormous expenditure of ammunition resulting from their rapid-firing mechanism have made a recognized military theory an imperative, practical necessity.

It may be interesting to you to know the importance given to fire tactics in the regulations of foreign armies.

The French regulations say: "Fire is the preponderating element in battle. Its action must not be abandoned to individual initiative, or else it will degenerate into a useless fusilade, cause a waste of ammunition, and accordingly expose the troops to the danger of finding themselves practically disarmed at the decisive moment. The duty of controlling the fire falls on the commanders of the companies forming the fighting line and on the officers employed on this line."

The German regulations say: "In action the utilization of the rifles, as long as control of fire exists, belongs

to the leaders. A rational employment of the fire is one of the essential guarantees of success. The necessary conditions to obtain it are calmness, tactical judgment, skill in estimating distances, gift of observation, correct appreciation of the ground, and knowledge of the ballistic properties of the weapon."

The Italian regulations say: "In order to obtain the maximum effect from infantry fire the indispensable conditions are a rigorous fire discipline on the part of the troops who execute it and an intelligent direction on the part of the leaders who command it."

German military writers are unanimous in the opinion "that fire discipline must be principally obtained by the moral ascendancy of the leaders over the men," and it is obvious that to attain such moral ascendancy the officers must first thoroughly study and master fire tactics in order that they may command the confidence of their men.

You must remember that the enforcement of fire discipline requires that all firing shall be done under and in accordance with orders, and that fire tactics require you in giving orders to indicate (1) the number of rounds to be fired, (2) the object to be fired at, (3) the number of yards, or the elevation to be used. To acquire the knowledge necessary to enable you to judge properly on these points will require study, for which purpose I would recommend to you "Infantry Fire Tactics," by Captain C. B. Mayne of the English Army.

In connection with firing I would again recommend to you the use of the whistle, and suggest that you use it in your drills, so that your men may become so accustomed to it that they will instinctively obey the orders to commence or cease firing when given by it. You will find this point of inestimable value if you are ever called upon for street-riot duty.

LECTURE NO. 4.

BY LIEUTENANT COLONEL OSCAR F. LONG, ADJUTANT GENERAL, D. C. MILITIA; FIRST LIEUTENANT FIFTH INFANTRY, U. S. ARMY.

Marches; advance guards; rear guards; flankers; wagon trains and their guards; bivouacs.

The kindly recognition this course of lectures has so far received shows that it has satisfied, however imperfectly, a want on the part of the National Guard. An endeavor is being made to give to regimental and company officers, and to non-commissioned officers, that which is necessary to meet the daily requirements of actual field-work without burdening them with scientific details which they have not the time, if the inclination, to acquire. No attempt is made to instruct officers of higher rank. The individual soldier is taken as the unit, but the soldier may become an officer; and a company officer, the battalion, regimental, or even brigade commander. Hence explanatory references are briefly made which may be of assistance to the junior if suddenly called to the responsibilities of higher rank.

You have been mustered into the service of the United States; you have traveled by steamer or rail, and have been disembarked at the point of rendezvous, and there properly organized, drilled, instructed and practically trained and disciplined for the emergencies of the march and field. A soldier heretofore in theory, you are naturally desirous of putting into practice the precepts gained, that your name, perchance, may be recorded in

history as you trust it will be revered by posterity. Well, the opportunity has arrived; for the orders, brief and explicit, have come to headquarters, and your commanding officer is now making them his study. Soon they will be transmitted through the regular military channels, and will be interpreted by your battalion and company commander, while the first sergeant will look to the details of preparation. All that is necessary for you to know is that you are to march, and that you are to equip yourself properly. Your captain will carefully inspect your equipments and refresh your memory if anything be forgotten. You recall, doubtless, the stirring lines of years ago on the charge of the Light Brigade:

"Their's not to make reply;
Their's not to reason why;
Their's but to do and die;"

and now you realize the force of the application, because you have been well disciplined and ask no unnecessary questions, having confidence in yourself, your comrades and your commander, and faith in the justice of the cause for which you are to fight.

ORDERS.

In giving orders there are certain principles to be observed, whether for a squad or an army, and upon the correct interpretation of which is gauged the successes gained. Napoleon's orders form the most perfect models; McClellan's were similar. They are precise, simple and practical, and contain no directions, except those pertaining to the command receiving them in its action as a unit. No particular details are prescribed. The entire initiative and responsibility is with the commander who receives the order, which, however, is frequently supplemented by letters or special instructions. Sufficient latitude should always be given to enable the

commanding officer to adapt his measures or movements to circumstances as they arise. He is on the ground and knows best what to do. The Germans believe in the brevity of orders. Therefore an order should embrace a brief statement of the situation, the movement to be executed, and, lastly, special instructions. Orders of march are not to be published to the troops, for they might easily get to the enemy through spies, deserters, or prisoners.

BREAKING CAMP.

In a well equipped and organized camp everything should be packed before the tents are struck. This is done simultaneously throughout the whole camp. Circular No. 13 of 1889 you are familiar with, and it best shows you how to strike a tent. After the tent is down the canvas is tightly rolled and secured by its ropes. The poles are tied together in one bundle and the pins put in a bag or box. All are placed together conveniently for packing and the necessary men are told off by the first sergeant to guard them and see that they are properly loaded in wagons or on packs.

An officer is an agent, as it were, to care for his men. He does the mental work—the thinking; but to the soldier we are indebted for the credit which comes of success. As Sheridan has well said: "The man who does the fighting and marching, and who carries the rifle, is the greatest hero of the war." Teacher and leader in every department should be the officer, which implies that he is superior in knowledge, experience and strength of character. Without fear of responsibility every officer, under all circumstances, should stake his whole personality for the fulfillment of his mission. This is the foundation of Prussian discipline. Authority should be graduated. In case of failure or

deficiency, responsibility can then be placed. Every officer and non-commissioned officer in his own sphere should be accustomed to the exercise of authority and to the free application of his own judgment. In war, great opportunities come to all, but it is the ability to improve them which counts. Alive to your comfort and welfare, your officers have seen that timely preparation has been made for the march.

PREPARING FOR THE MARCH.

Heavy marching order means that you must wear undress uniform and field equipment, including rifle, ammunition, blanket-bag, haversack, canteen, blanket, and overcoat. In the haversack are the meat can, tin cup, knife, fork and spoon. In the clothing bag is the requisite clothing, namely, two pairs of socks, one woolen blanket, one rubber blanket, one undershirt, one pair of drawers, one pair of shoes, one dark-blue overshirt, one overcoat, and other articles, such as gloves, comb, brush, towels, handkerchiefs, reduced to a minimum. Only authorized articles are taken. The blanket-bag would then weigh approximately twenty pounds; this without the piece of shelter tent, which is sometimes carried.

The company commander should inform his men what their outfit is to consist of, should exercise them in putting on and taking off the field equipment, and instruct them how to roll and carry the blankets, overcoat and shelter tent. On assembling the company for the march he carefully inspects the equipment of each soldier, and causes every unauthorized article to be rigorously discarded; he sees that every rifle is clean and in perfect working order, and that each man is supplied with the proper number of cartridges, and canteens and haversacks are filled.

The company officers should circulate throughout

the camp during the packing up, in order to properly direct it.

The first sergeant provides himself with a morning report book, sick report book, record book, and memorandum, with the necessary books for rosters of details of service. These are placed in the field desk with the requisite stationery. Every article of public property—the gun, belts, haversacks, etc.—should be marked with the letter of the company and the number of the man. The first sergeant keeps a list of such in a memorandum book. Every article of uniform, clothing, and bedding should also be marked with the initials of the owner—this to avoid confusion. If not carried on the person, the bedding will be compactly rolled and secured with a strap or rope.

The commissary provides the quartermaster with a list of packages and weights of rations to be carried. The wagons to carry rations are usually packed first.

The quartermaster looks after the transportation, makes suitable and timely requisitions, based on the strength of the entire command, which he secures from the morning report. The drivers either mess by themselves or are assigned equally to the companies. In our service 4,000 pounds is the maximum carried in a Government wagon, and the weight of the load per aparejo for packs should not exceed two hundred and fifty pounds. Company details are furnished to load and unload baggage, and while so engaged are under the orders of the quartermaster. The quartermaster arranges, under the direction of the colonel, for the camping places and water, and for the delivery of fuel and forage, while the commissary sees that fresh supplies are delivered at the proper place and time. The men detailed for guard and the cooks accompany the wagons, as does the camp guard and the quartermaster. The wagons, as soon as

hitched up, proceed to some specified point to await the column.

If the service is to be a special one and the officer is to separate himself from his command with a detachment, he should learn all he can of the country and its capacity for supplying his command. He should furnish himself with the necessary maps and guides, tools and ropes, and everything which may be necessary to further the object of his mission. A soldier in the field necessarily has to "rough it," and has perfect faith, as he has a right to have, in the forethought of his immediate commander to provide him with what is necessary to put him in fit condition. If the officer has not had the experience, it is desirable that he profit by the experience of others, and he should not hesitate to make inquiries when necessary.

I will append to this lecture tabulated statements of the weight of arms, equipment, ammunition, and supplies carried in our own and in foreign armies at the present writing.

THE MARCH.

You are now ready for the march and are off to occupy a strategic point to be held for defense.

To an enlisted man, and even to some officers, marches mean so much distance attended with so much discomfort and fatigue. The longer the march the greater the fatigue. Of course you have learned that the direct step in common time is thirty inches (ninety steps to the minute), and in quick time one hundred and twenty steps to the minute. In double time the length is thirty-five inches to the step. Information relative to the proper execution of marches is always important. It is in time of peace that the necessary exercises should be indulged in which prepare a soldier for the march. An

army which marches better than the enemy has a great advantage over him, and it has been well said that "troops inured to fatigue and habituated to the march are already half prepared for war." Where good discipline prevails there are few stragglers, and the morale is affected by the forethought bestowed upon the dispositions for the march. Every useless hardship wearies and irritates the soldier, while those necessary are cheerfully borne. Therefore the enemy should be reached as rapidly as possible with the least fatigue to the soldier.

The first day's march should be a short one, that time and opportunity may be afforded to remedy oversights in regard to packing of wagons, transportation, tentage, subsistence, etc. Every detail should be carefully supervised and corrected, and a thorough inspection made the first night in camp of the equipment of men and horses and of the transportation. The command should be afforded an opportunity to "pull itself together," as it were.

In Germany the rate of march is about two and a quarter miles per hour, including the time they halt; on poor roads this is reduced. About fourteen miles is the mean length of their daily march; in France, about fifteen miles. If possible, every third day is allowed as a day of rest. Napoleon's marches were about fifteen miles per day, and during the Franco-Prussian war the French rarely exceeded twelve and the Germans thirteen miles per day on an ordinary march. In England the rate of infantry march is about three miles, artillery four, and cavalry five per hour; in the United States, about the same. Cavalry trot at about the rate of eight miles per hour, and gallop twelve; artillery the same.

The order of march on a road depends on whether the enemy is near or distant. If near, the troops should march in the order in which they are likely to go into

action. If the enemy be distant, the convenience of the troops need only be consulted. If possible, a separate road should be told off to each arm—the shortest to the infantry, the hardest to the artillery, and the softest to the cavalry. Each column is preceded by its own advance column. So timed should the march be that the columns will arrive at about the same time on the camping, halting or fighting ground. The object for which a march is made and the nature of the country through which it is undertaken can alone decide the number of columns. On marches stragglers (who are simply used-up men) should be formed into companies and utilized on the lines of communication.

The influence of marches over tactics and strategy cannot be overrated. The most brilliant conceptions and the most profound combinations must fail if the troops do not move as calculated on; consequently the art of marching forms the most important portion of the science of war. Marches are the immediate prelude to fighting. They have for their object and requirement the bringing of the troops to the right place at the right time in an efficient condition. The length of the column, nature of the roads, the season of the year, and the state of the weather all influence the rate at which troops can move. Transportation should be reduced to a minimum, especially on rapid marches.

Officers should not give permission to men to quit the ranks, except on account of illness or some other absolutely necessary purpose. They should be prevented from going out of the ranks for water, and when ill should apply to the company commander for the requisite permission.

In the field many things conspire to impede the progress of the troops on the march. In the passage of defiles the foremost troops should slacken the pace upon

issuing from them, to prevent loss of distance. Bridges occasion much delay, the time of transit being increased about one-fourth. The step should be broken in crossing; the infantry should go over in groups of forty or fifty men, cavalry in column of files, and wagons singly, if necessary. Marching on parallel roads, a wider area of country is made available for supplies. If the length of column is reduced, deployment is facilitated. In a thickly wooded or mountainous country the head or rear of the column should be constantly on the march, and the troops kept well in hand at all times. The Germans, like their forefathers, divide for the march and concentrate for the battle. Columns are so formed that they may pass to the combat order with the greatest possible celerity, still reserving on the march an independent action. It is of the utmost importance to shorten the marching columns. The best plan seems to be to move on as broad a front as the roads permit, with the ranks closed up. The usual modern formation is: first, advance guards, followed by cavalry; infantry sufficient to protect the artillery; main column of infantry; after which come the trains, ambulances, convoys; then the rear guard. As a general rule, part of the artillery is at the head of the column, their services being required at the commencement of an action, while a great part of the cavalry is sometimes at the rear, since, when required, their rapid pace would soon bring them to the front. As the column is increased in extent, troops become more fatigued and have fewer supply facilities. The duration of marches depends upon the depth of the columns. To give an idea of the length of columns in our more recent modern wars, perhaps it is interesting to state that a German division, with its combat-train and convoy, occupies a length of over eleven and an army corps of nearly thirty miles. In France these

distances are reduced to nine and seventeen miles, respectively.

On hot or rainy days the march should be completed before noon, if possible. The captain should see his company march before him each day and inspect them when they reach camp; by this means only irregularities can be corrected. The troops will not be turned out too early in the morning, for they cannot work without rest and need the maximum of repose.

The pace on the march should be a steady one and the column kept closed, no soldier being allowed to fall out. Men should not pick their way in fording streams, and intervals are to be maintained. Every moment of halt should be utilized for rest or refreshment. The first halt usually takes place about thirty minutes after starting, and should be for about fifteen minutes; thence hourly for five minutes. This is the German rule. If the march be about fourteen miles, the halt should be for thirty minutes, half way. Halts should not be made in villages or short defiles. Avoid old camping grounds, and always procure the best shelter. If passing a defile, a short halt enables the troops to close up. In England, a half-hour halt an hour after starting is made, and once every half hour thereafter for five minutes. The men are thereby enabled to ease themselves and adjust their equipment and clothing. The march should always be made with as wide a front and open an order as possible. If in an arid country, the march should be made before the sun rises or after it sets, that the suffering and fatigue may be less. No honors are paid by the troops on the march. If possible, a journal or itinerary is kept by the officer, from which a map may easily be made. It is by the rapidity of the march that the effect of an army's force is multiplied. Marshall De Saxe said: "In war, the secret of success lies in a soldier's legs," and history

reminds us that Napoleon won his great victories as much by the marching power of his soldiers as by their courage and skill.

BOOTS, SOCKS, AND FEET.

Experience soon teaches the officer and enlisted man to pay special attention to his feet, for they cannot march with crippled feet. The Government furnishes the best possible campaign shoe, as well as socks, woolen or cotton, overshoes, and leggings. The company commander should see that the boots or shoes fit well and do not chafe. Careful inspection of the feet and instruction as to their care should frequently be made. At the end of a march the feet should be washed and wiped clean and dry. A blister is best opened by a small hole at the lowest point, allowing the fluid to drain (the skin should not be torn), and the feet should be afterwards rubbed with tallow and the socks put on at once. Tender feet can best be cared for by the application of an alum and tepid-water solution. Wet feet may be uncomfortable, but are rarely harmful to a man in good health taking active exercise. If shoes wear out, recollect that sandals, gunnysacks, or even nosebags can be utilized. For want of socks, pieces of linen smeared with tallow are often available. Good shoes last about two months constant marching over rough roads. In arid countries it is said that the hotter the ground the thicker should be the sock. In winter woolen socks frequently cause chill by the retention of moisture through perspiration. In a hot country shoes should be frequently greased.

Soldiers who are fed best march best and fight best. War cannot be made without food for men and animals. Men who march, scout, fight, and suffer all the hardships that fall to a soldier's lot in the field must have

the best bodily sustenance and every comfort that can be provided. Feed your men well, and when hard or daring work is to be attempted a hearty response will be had. The best proof of capacity in a commander is evidenced by the condition of his command.

FOOD AND WATER.

There are few things more distasteful to an officer than the supervision of the cooking, and yet none are more important, looking to the well-being of the company. An old soldier drinks and eats as little as possible during the march, while the recruit constantly munches the contents of his haversack. The recruit is always hungry; his hunger is real, and should be respected. Messing should be by company, if possible, and not by detachment. It means an increase of comfort and contentment and economy of time and labor.

The ration is a uniform allowance of food; it is wholesome, well cooked and of sufficient quantity and variety. Every soldier should know something about cooking, for he may be detached from his company and have to cook for himself. Three pounds is about the weight of a soldier's rations in bulk, and a fraction over two pounds when carried in the haversack, for canned food now simplifies rations. The object of the Government in supplying this ration has been attained by issuing that which contains the greatest nutrition with the least weight for the soldier to carry. Bacon, hard bread, beans, coffee, sugar, salt, and pepper comprise the ordinary ration; canned beef and beans are furnished for the travel ration. Fresh beef and vegetables are always secured when possible. Salt meat is issued about three days in ten. Improvidence is proverbial in the soldier, and can only be checked by the watchful care of company officers. If not to starve on the march,

soldiers must carry rations; but they should not follow the example and improvidence of our Indians, who frequently consume a week's supply in one feast. The climate affects the food and its supply; when necessary, precautions should be taken to preserve or protect it.

A man can live without food for forty-five days, or longer; without water, but forty-eight hours. In a hot climate one is enfeebled by thirst much sooner than by hunger. Horse flesh may be used in an emergency, for it is palatable and stimulating. Spring water should always be secured if possible, and in passing through a country changes in the kind of water used should be avoided, for diarrhœa and dysentery frequently result; and through carelessness in this regard an army suffers more than from the bullets of the enemy. Canteens should always be filled before starting on the march with water, or better still, coffee. Soldiers should drink before starting, but nothing all day, if possible, until camp. The mouth should be kept well closed on the march. The Arabs cover the mouth with a cloth. Water furnishes an avenue for the introduction of disease. Ordinary well water is doubtful and should be avoided; it may be contaminated. Springs, the origin of which is remote from habitations, large lakes and streams flowing through sparsely settled regions, furnish the best water, except rain water. Rain water can be caughtand utilized in various ways. Those who have been accustomed to drink hard water should not drink soft water, and the reverse. Muddy water should be filtered; salt water and putrid water boiled with charcoal. A man drinks from three to five pounds of water daily. Abstinence from fluid during the march is an easily acquired habit and of great convenience. The sensation of thirst can be relieved by carrying in the mouth a pebble or a piece of lead, which causes a

flow of saliva. Foul and alkaline water should be avoided. Coffee supplies warmth in winter, and in summer, replaces respiration. Tea, practically, has the same effect. For cooking and drinking, a man requires about six pints of water a day; for washing, the same. On a halt or in camp the water supply should be at once guarded. Horses and dogs sometimes exhibit an instinct in discovering water where the intelligence of man fails; cattle are uncertain in this respect. Sap and pulp can be obtained in an emergency from roots or plants. Fat or butter allays thirst.

RIGHT OF WAY ON MARCHES.

If two bodies of troops meet on a road, they pass to the right if the road be wide enough; if not, the first in order of battle takes the road, the other halts. If they meet at a cross-road, that which arrives last halts if the other is in motion. A body of troops on the march must not be cut by another, and if it has precedence in the order of battle it passes troops which are halted. Light artillery always has the right of way.

BIVOUACS.

To bivouac is to camp at night without tents or covering. The Swedes have a proverb that "the forest is a poor man's jacket," for they know that a clump of trees yields excellent shelter in stormy weather. Bivouacs are to be avoided if possible, and particularly in places where fire or wood is not procurable. A screen eighteen inches in height will guard a man from the storm. Fallen trees and foliage may be utilized, with dry leaves and hemlock bows to lie upon. Avoid low ground and damp soil. The near neighborhood of water is objectionable on account of the probable presence of malaria and mosquitoes. The Arabs often bury themselves

in the sand and the Indians of the plain sin the snow, for shelter. Temporary shields or shelters frequently are made and utilized for protection. Arctic travelers find sleeping bags a necessity; our Indians use shelters, or tepees, made of bent boughs and covered with foliage. A mound of sand, or earth, or grasses, or even a saddle may be utilized for a pillow. Forked uprights, a pole between, and a number of slanting boughs interlaced with smaller boughs or grasses afford protection from the wind or dew, and partly from the rain. Ponchos, canvas, or water-proof blankets may be utilized in this connection.

STRATEGIC POINTS.

Strategic points are those positions in the theater of operations the possession of which increases an army's power for action. Their number depends upon the nature and extent of the country operated in, and their importance varies with the conditions of time and place. For an army in the field, of which you of the National Guard may be a part, they form objectives, and upon their advantages the lines of operations depend, and upon their possession, your line of march. Generally the principal position of the enemy ought always to be the first strategic objective. Railroad centers are also important, as also are cities. Strategic lines embrace those which are of service to an army in the field, such as lines and bases of operations. A river or a railroad frequently forms such a line, with its centers of supply or contingent variable basis. A base of operations is the actual starting place from which an army in the field proceeds to encounter the enemy and to which it looks for reinforcements and supplies. Napoloen in 1805 had a base of operations on the Rhine, menacing the front of the Austrians, and another parallel to their line upon

the Main, in their rear. The capitulation of Ulm was the result.

DIFFERENT KINDS OF MARCHES.

Now that you have an idea of strategic points and strategic lines, we will describe the various marches.

Marches are of many kinds, each of which has a definite object in view.

STRATEGIC MARCHES are either for the purpose of moving from a base to an objective, or from one objective to another. They are made to gain an advantage over an enemy and usually lead to decisive battles. Von Moltke in his combinations of 1866 and 1870 offers complete instruction in the principles governing their execution. The objective once fixed upon, the line of march is determined. Strategic marches are usually made to weaken, disconcert or destroy the enemy.

MANEUVER MARCHES have for their object to reach the enemy in force upon a decisive point, and are either front or flank marches.

The FRONT MARCH is adopted with a view to an encounter with the enemy, and has been referred to.

FLANK MARCHES are those which follow a direction parallel to the front of a hostile army to which the flank of the marching army is exposed. They sometimes lead to the turning of the enemy's wings, and are difficult and dangerous.

The side nearest the enemy should be protected either by troops or naturally by rivers or mountain chains. These marches differ from others only as regards the position of the enemy. Time for their execution is an important element.

WHEELING MANEUVERS may be described as those marches executed on one wing as a pivot, with the other wing properly covered. By such a maneuver

Napoleon, in 1808, outflanked the Russians in Poland and separated them from the Prussians.

TIME MARCHES are to get troops at the right place at the right time in good condition. To insure this, reconnoissance is necessary to find the obstacles to be overcome.

The term QUICK MARCH is applied to those marches which are from fifteen to eighteen miles each day during several consecutive days without pause.

FORCED MARCHES are executed only when necessary to bring to a designated point in the shortest time the greatest possible number of men in condition to fight. These vary in length from twenty to thirty miles. Such extraordinary marches have frequently been followed by brilliant combats, as was that of Murat after Jena. Forced marches should never be made on the first day of a campaign, unless the march is short, and they are to be completed the day begun.

NIGHT MARCHES are made only when the objects sought cannot well be attained in any other way. Sometimes they are a necessity, but if possible should be avoided, for obvious reasons. They render men unfit to fight the next day, cause many delays, and in many cases are very fatiguing, and through straggling and disorder the men are apt to lose their way. More frequent halts are necessary and panic is very liable. The speed of night marches is less than that of day marches. Usually they are regarded as exercising an injurious influence upon the health and spirits of the men, and are baneful in the effect produced upon discipline. Fortunately they are exceptional and only executed when an emergency demands it. However, if necessary, they are made without hesitation, but with due care for the endurance of the troops. An ample margin of time

should be allowed for delays. Patrols are avoided in night marches, but alarms are to be guarded against as almost fatal, so easily are stampedes caused at such times. Errors, misapprehensions and surprises present great danger. In hot climates night marches are admissible. Night actions are effectively conducted with the bayonet. At Tel-el-Keber Lord Wolseley found a night march to be imperative and boldly planned and skillfully executed it. The result was a complete victory the next day. A march in daylight against such a strong position would have been attended with great loss if not actual defeat. The safest course, if the enemy is met, is to attack at once without regard to comparative numbers.

PRACTICE MARCHES, as the name implies, are principally for instruction. In the German army long marches are made in the country in the spring to inure the men for the fall maneuvers and to keep them in sound condition. On the plains our army on these marches undertakes to surprise, capture or circuit a military post, and to deceive or mislead commands sent in pursuit. Such marches give the best information of the country; they bring out conception, adroitness and skill of the officer in command. When a detachment surprises or captures a command or post, upon discovery the bugle is sounded and the surrender peacefully effected. Such marches leave a commander entirely free to form his plan of operations and exercise his individual talents, and have in many respects simulated the condition of affairs of a campaign of actual hostilities, with gratifying results.

A retreat is a RETROGRADE MARCH. It may be voluntary or compulsory—*voluntary* when the force retires without conflict to take up more advantageous ground. These marches are seldom executed, and with the

arrangement of modern artillery the pursuer can almost always reach the ~~pursuing~~ column. Wellington in 1810 executed a voluntary retreat when he fell back from Viseu. Only when the requisite time and space can be had should such a design be carried out.

Compulsory retreats consist in successfully retiring a beaten army, and are difficult of execution. Forced retreats are general; voluntary retreats, the exception. After the loss of battle the retreat is begun. It is decided upon when the last reserves are forced to be thrown into combat. Only in the last extremity, when hope of succor is lost, or the struggle is decisively against him, should the commander order a retreat. Supports necessary for the withdrawal from the field should be in readiness and the movements be resorted to in time to avoid the disorder incident to the impairment of the morale of the troops. The troops pass from the deployed order to the order in column, and this cannot well be executed on the battle-field without serious loss. Supporting bodies should be in readiness in each regiment to shake off the enemy's grasp by active charges and vigorous fire. Counter-blows should be delivered to check his impetuosity and available guns concentrated upon him. The artillery should hold out to the last extremity and the retirement made with the utmost speed consistent with good order. If possible, the action should be delayed until nightfall, that darkness may disguise the movement. The cavalry often covers a retreat and screens the columns.

"Time and distance," General Wolseley says, "are the elements upon which all military movements hinge." It is essential that the main columns should be protected on the march in all directions; hence arises the necessity for a circle of defense, as it were, consisting of advance guards, rear guard and flankers.

ADVANCE GUARDS.

An advanced guard is a body of troops which precedes the main column. Its duty is protection and reconnoissance—to "feel" for or engage the enemy, clear the front, give timely notice of his presence or delay his advance; to reconnoiter the country and remove obstacles. It is the duty of the advance guard also to see that the proper road is followed. Its strength depends upon the strength of the command, the nature of the country, and its distance from the column which it guards. It should be able to give at least an hour's warning of the presence of the enemy. Generally the strength of an advanced guard varies from one-sixth to one-fourth of the entire strength of the command. It should be always strong enough to arrest the enemy and compel him to display his forces, thus giving the remainder of the column time to deploy. With large commands the three arms of the service are utilized for advanced guards to the extent of one-fourth to one-eighth of the entire command. With small commands cavalry and infantry are mainly utilized, the cavalry being used for reconnoissance service.

The advance guard is composed usually of an advance party, support and reserve; the advance parties being most frequently, with small commands, deployed as skirmishers. The commanding officer remains with the reserve. The advance guard should not delay the advance of the main column; it guards its own flanks and keeps up constant communication with the main column by telegraph, signals, or mounted orderlies. There is no country through which an army can move in the order of battle, else advance guards might be unnecessary. Generally they are at a distance from one thousand to fifteen hundred yards in advance of the main column, depending upon the nature of the country, whether open, broken or mountainous.

The commander of an advance guard should be quick of decision, determined in action, cool and deliberate and of sound judgment. The non-commissioned officers, particularly of small advance guards, should possess not only courage and energy, but activity and intelligence as well. They may under exigencies be brought to an important command. In retreat an advance guard is told off to reconnoiter, clear the road and select a suitable position for the main party to bivouac or accept battle.

REAR GUARD.

The rear guard is but an advance guard reversed. They are of two kinds: with the forces advancing against and a force retreating before, an enemy. The duties of the first are mainly confined to the interior police, stragglers, marauders and to the protection of camp-followers; to afford assistance to the train and guard the rear of the column. The duties of the second are more difficult, and consist in preventing the main body from being attacked or its march interrupted and to delay to the utmost the advance of the enemy. The rear guard par excellence is with a force retreating, for they must do what a whole detachment or army has failed to do, stop a hitherto victorious enemy that their own main column may get off the field and reorganize. The rear guard simply retards pursuit, and must keep itself beyond the reach of sudden attack. Counter-attacks may be made by the rear guard with advantage.

The composition of rear guards depends upon the nature of the country. With small commands, cavalry and infantry would suffice, depending for their strength, as does the advance guard, upon the nature of the country, the importance of their duties and the nature of the pursuit of the enemy.

With large rear guards, artillery is added to the other two arms. Their strength is usually from one-fifth to one-fourth of the main force from which detached. The tactics are essentially defensive. The order of march is: mounted troops with machine guns, infantry, and artillery nearest the main body. The freshest and best troops should be selected, for the duties are most trying, requiring courage, patience and good temper. Such duties demand the highest qualities of a soldier, and discipline is surely and severely tested in covering a retreat.

Napoleon has said that "No man is a general until he has conducted a retreat." With large bodies of troops the rear guard has its support, and sometimes its reserve, as does the advance. It must be careful not to be cut off from the main column. The Duke of Wellington first distinguished himself in conducting a rear guard in the Low Countries. The rear guard has the advantage of position over the pursuing column, naturally being able to select it. The duties of the rear guard require more intelligence, greater zeal and more untiring watchfulness than otherwise fall to a soldier's lot. Sometimes the rear guard is utilized as a provost guard and has charge of matters affecting the interior police, of prisoners, prevents marauding and arrests stragglers. The commander of a rear guard frequently is the officer of the day after its guard duty is finished, and for twenty-four hours thereafter is charged with the general police of the camp.

FLANKERS.

Flankers are detachments thrown out on each side of a column several hundred yards or more, the distance varying with the nature of the country traversed. Each detachment throws out a few men who patrol still

further outside and have their supports between them and the main column. Their duties are similar to those of advance guards, their strength depending upon the near presence or strength of the enemy. They watch defiles and woods, keep scattered, do not fire upon seeing the enemy (unless attacked), but retire silently and report. In other words, they act principally as scouts.

In civilized countries railroads are now so numerous that in the military operations of the future they will, to a large extent, be utilized for purposes of transportation of troops and supplies. However, wagon and pack transportation will always be a necessity. They comprise all sorts of vehicles and pack animals.

WAGON TRAINS AND THEIR GUARDS.

Trains are known as siege, pontoon, ammunition and supply trains. Very long trains are to be avoided. In 1862 McClellan's army made use of over eighteen hundred wagons and eleven hundred pack animals. The train should follow on several roads if possible. Of course, the quartermaster has charge of them, and makes frequent and careful inspections of his transportation. Where the roads are bad, extra teams are used. If a wagon breaks down it is drawn off to one side while being repaired, but does not lose its place in the column unless the damage is irremediable. The train is assembled and loaded under the direction of the quartermaster by company details. Baggage is kept separate as far as possible; no men but those specially authorized are allowed to ride in baggage wagons, either loaded or empty; baggage is not allowed to be taken from the baggage wagons except by permission of the quartermaster. Extra parts should accompany each wagon, with rope sufficient to extricate it from mud or sand.

Each driver should thoroughly examine his wagon after the march and repair broken parts. Drivers are, as far as possible, employés of the quartermaster department; sometimes it is necessary to replace them with enlisted men.

Wagons march in double line when the roads admit. Each wagon, with four animals, occupies about ten yards of road. Trains keep to the right of the road to admit of the free passage of troops. Ambulances and the trains carrying supplies or provisions needed during the march are in the immediate rear of their regiments, brigades, or divisions; supplies not thus needed are with the reserve train in rear of the main column. Wagons containing loose powder usually march by themselves. On arriving in camp, baggage wagons are driven to the kitchen first, then to company and headquarters' tents, where the baggage is unloaded as nearly as practicable at the places where it is to be used, after which the trains are "parked."

In parking, all wagons are turned in one direction, the poles toward the place of destination. The square is a strong defensive park, which serves as a redoubt. In the Indian country the circle is frequently used for a park. It is advisable to see that, wherever parked, the ground can afford no shelter to the enemy. Ammunition wagons are placed inside of the square. Pack animals travel better in front than in rear of the wagons.

The trains are guarded on every side by escort and flankers or are covered by the rear guard. The guards for the train usually consist of cavalry and infantry. If the train travels on separate roads it has its advance guards, flankers, and rear guards, with reserves, and sometimes with center divisions, depending upon the length of the train. Wagon-train drills are practiced in some foreign countries, but not in ours.

Transportation constitutes one of the greatest difficulties to be contended with in a campaign. Napoleon's grand army, in its retreat from Moscow, lost by freezing in one night thirty thousand horses, thus compelling him to leave a large part of his supplies and artillery; hence the suffering which history informs us his troops were compelled to undergo.

GENERAL CONSIDERATIONS.

You should prepare yourself physically as well as mentally, practically as well as theoretically, for actual war; long and tiresome marches are before you. You may have to ford swift mountain streams, construct rafts of logs or bundles of dry reeds; to ferry your baggage, swim deep rivers, march on foot to save your worn-out and exhausted animals; climb mountains, and do much else which will tax your reserve force to the utmost. Above all, prepare for emergencies. Carefully guard the interests of your command, however small, and win the confidence of those who faithfully serve you. It was through this that Sheridan's magnetism filled weary limbs with the vigor of youth, and fainting hearts with the determination to seize victory at any cost. While others slept, he was making himself thoroughly acquainted with every detail which administered to their comfort or supplied their wants.

A company commander should give appreciative and unremitting care, together with firm and just discipline, to his company. He will find that dissatisfaction will thus be quieted and prejudice overcome; for a well fed, well clothed, well cared for, and well drilled body of men can only be successful—temperate and regular habits giving the best results. A company commander should be kind and considerate to the enlisted men and alive to their comfort and welfare. Practical experience

on the frontier teaches that such effort will not only be appreciated, but will be requited by personal affection and gratitude. General Sheridan won the regard of his men by his thoughtful care and attention to particulars; and this confidence stopped a panic-stricken army at Mill Creek, restored their broken ranks, and gained the battle which followed. A man who does rough work requires twenty-eight ounces of food a day. Scurvy, so frequent among men deprived of their usual ration, is influenced by mental depression, and is due to the absence of vegetable acids in the food. It is to be avoided if possible. Cheerful surroundings and the use of fresh vegetables check it. The *precautions to be taken* against fatigue will suggest themselves to every thoughtful officer or enlisted man. A few are instanced which are practical and may prove of advantage.

Bad food and lack of change of clothing lay the seeds of typhus and typhoid fevers, and fevers we know decimate an army which is often rendered a prey to the enterprise of the enemy.

Bad fitting and badly darned socks are to be avoided. Discomfort and sore feet would result naturally from their use.

Timely and convenient halts should be made and a steady and long pace (which is regular) should be adopted in marching.

On the plains a belt is more frequently used than suspenders, because it allows freedom of motion of the upper part of the body. Leggings are indispensable.

If marching through the snow, if colored glasses cannot be obtained; it is always well as a precaution to darken the eyes, both underneath and over.

The importance of flannel next to the skin cannot be overrated, the best after it is cotton. Sleep in shirt and drawers, removing the shoes and socks and outer cloth-

ing.

When at a halt lie down, for every moment refreshes.

Meals should be prepared as soon after arriving in camp as possible.

If wet by rain or swimming rivers, keep in motion; don't get chilled.

Never lie or sit down on the damp earth; use your hat or handkerchief.

Abundant sleep is necessary for bodily efficiency.

Personal cleanliness acts like a charm against disease.

Encumber yourself with as few articles as possible.

Try to be self-reliant and independent, for you may be detailed on duty as scouts, couriers, or trailers, and have to rely upon yourself.

Remember that, besides physical care, the cultivation of contentment is important in forming the best soldier.

If you are in camp and have time to devote to it, remember that games and sports partaken of, if of an athletic character with a military spirit to them, cannot but improve and fit you for the practical work of a soldier. We have not yet reached this stage of training but in other countries, especially England, much attention has been paid to this subject. Their batteries are required to drive at full gallop between gate-posts six feet ten inches apart, halt and dismount fifty feet further on, and put their guns into action. Cavalry are required to gallop and jump the hurdle, then proceed by the right or left flank, make their horses lie down, and fire from behind them at a moving body. Contests between the mounted cavalry and dismounted infantry are frequent, as is wrestling on horseback. The infantry often have competitions of a half-mile run, in heavy marching order, with prizes for the winner. Bayonet competitions are frequently indulged in, as are those with the sword. Sprint races, long, broad, and high jumps and tugs of war form also a part of the sport.

It might not be uninteresting to note the manner by which marches may be made by the aid of the sun or stars without the use of the compass. In northern latitudes the sun appears due south when passing the meridian at noon; consequently a man's shadow, or that of a bayonet placed vertically in the ground, would point due north at noon. Estimates can be made before and after midday by the height of the sun. In southern latitudes the sun appears due north at noon. A piece of card-board and a common brass pin will make a sun or star compass. On the plains certain flowers indicate accurately the points of the compass, from which direction can be ascertained. At night it can be taken from the stars. The polar star gives true north, and can be found from the "Great Bear" constellation.

CONCLUSION.

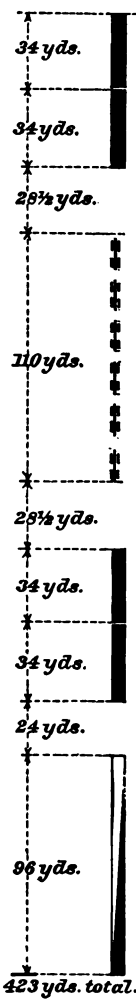
It has been endeavored in the foregoing to give you the ideas of officers and military writers of ability of the most recent date that you may profit by the instruction they have put within your reach. Victory is often made easy when we study the chief causes of defeats or successes of our adversaries. Napoleon has said, "Before ceding victory, wait until it is snatched from you; before retiring, wait until you are forced."

The average soldier of the National Guard is to-day a military student. He desires to deal with the most recent developments of the art of war. Precepts are supported by examples, and of examples the guardsman makes a close study. Determination and purpose may do much for any one with ability who is willing to put forth energy in a cause; and while opportunity has much to do with success, success depends very much upon the man.

You have now been conducted to the strategic point

which you hold for defense, and into the presence of the enemy, and will next be taught how to act in case of attack. You must remember that the combat is the decisive act of war.. You have marched well, and now it is hoped that you understand how best to march with least fatigue to yourself. After your first combat you will be classed as veterans, and may justly bear yourself with pride when called, as you will be, trained or seasoned troops.

SPACE OCCUPIED BY TROOPS ON THE MARCH.



STRENGTH OF COLUMN EN ROUTE.

1 Battalion Infantry, 4 Companies, 100 men each.
1 Troop Cavalry, 96 horses. 6 Guns.

N. B.—This is the exact depth of the Column at corners distances, but on the line of march about 20 per cent. must be allowed for opening out, so that the Column would occupy fully 500 yards of road.

ORDER OF MARCH FOR MAIN COLUMN OF A DIVISION.

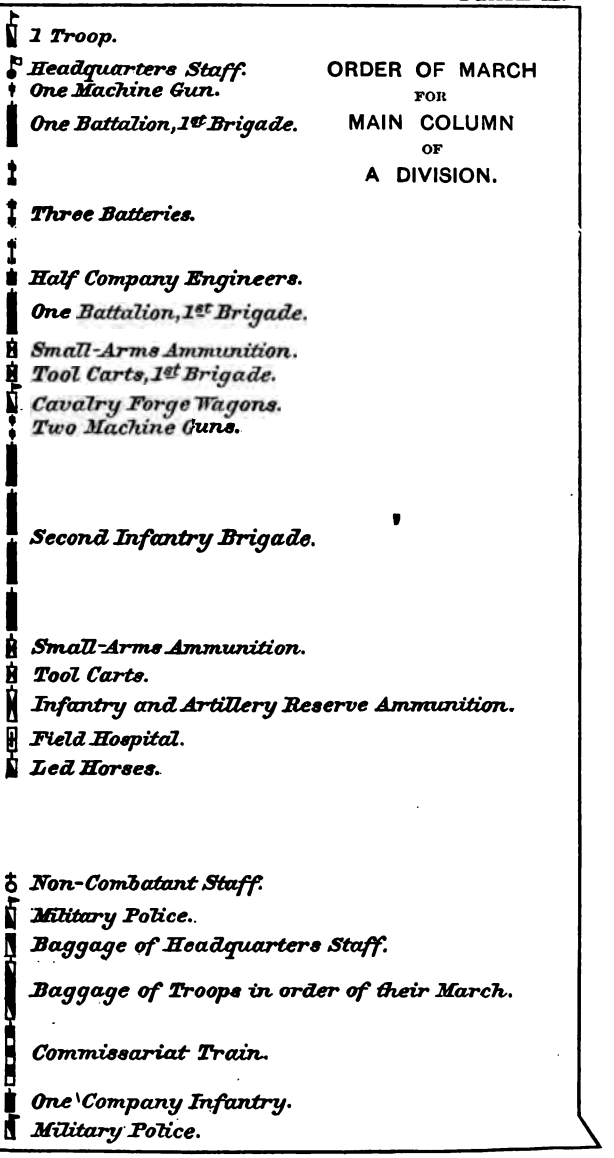
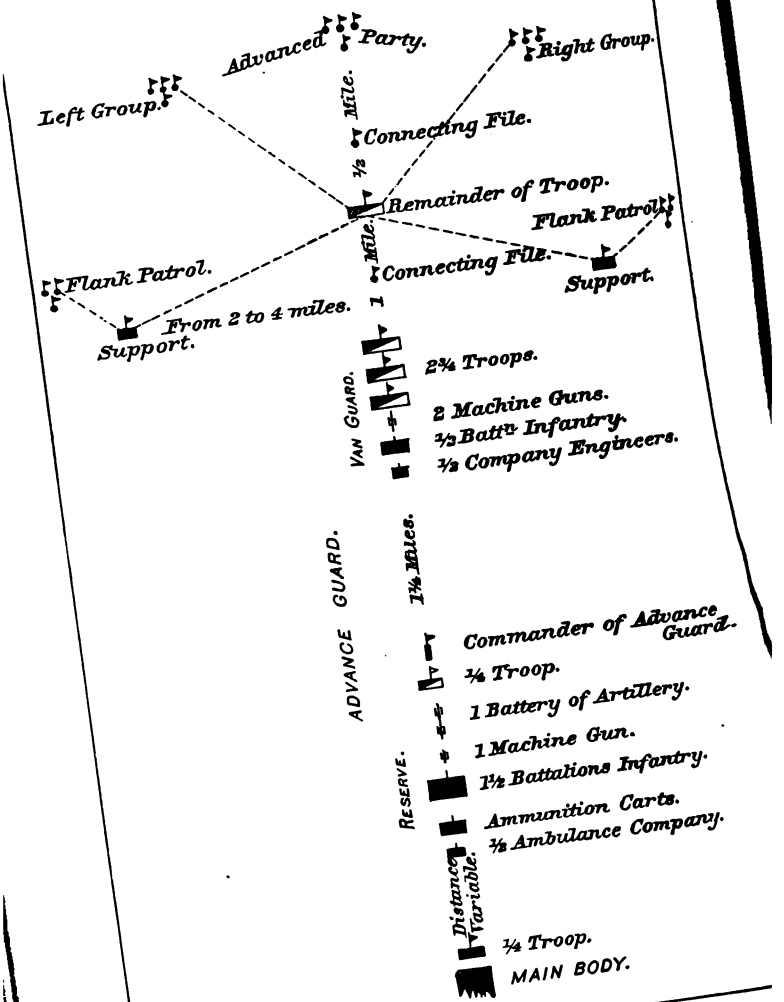


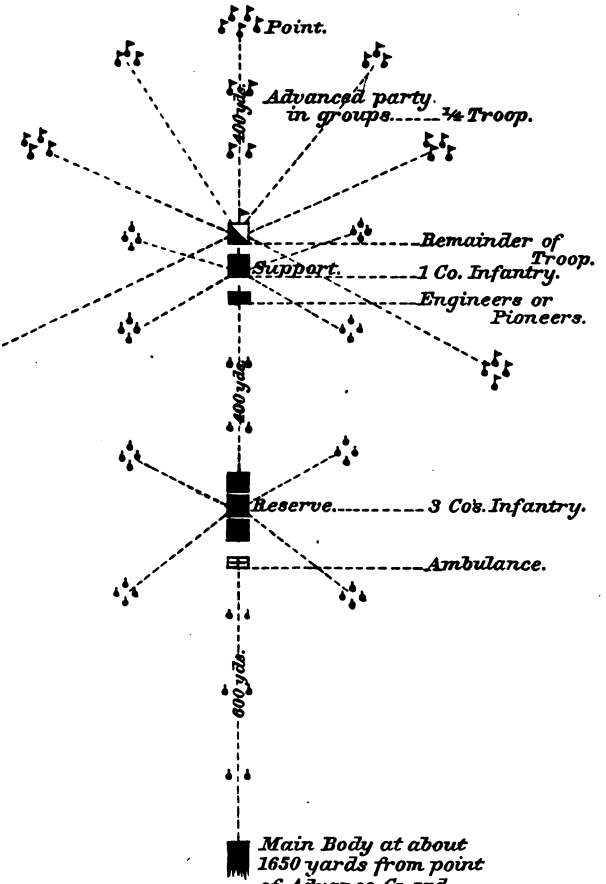
PLATE III.

ADVANCE GUARD OF A DIVISION.



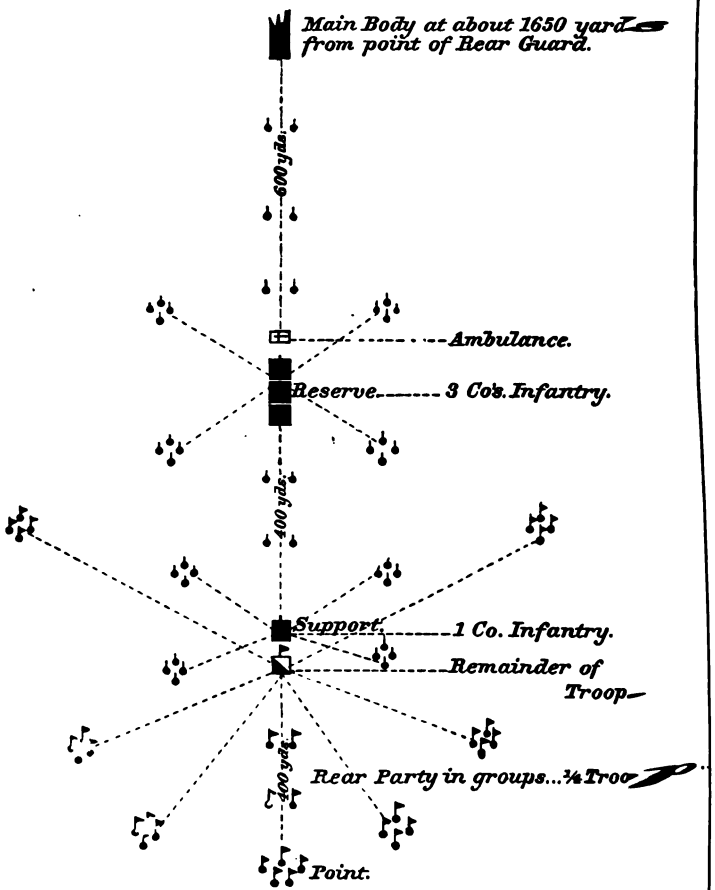
ADVANCE GUARD.

4 Companies of Infantry and 1 Troop of Cavalry.



REAR GUARD.

4 Companies of Infantry and 1 Troop of Cavalry.



In the preparation of the foregoing the following works have been consulted, and are recommended for a more extended reference in the subjects mentioned:

Art of Travel ---------- Francis Galton.
Elements of Modern Tactics ------ Lieut. Col. Wilkinson Shaw.
Field Service in War ---------- Francis J. Lippitt.
Manual of Guard Duty ---------- Lieut. James Regan.
Minor Tactics ---------- Gen. C. F. Clery.
Modern Tactics ---------- Capt. H. R. Galt.
Modern War (Parts 1 and 2) ------ Col. V. Derrecgaix.
Notes on Minor Tactics ---------- Lieut. Col. G. H. Haldane.
Practical Instructions for the National Guard
Lieut. W. R. Hamilton.
Precis of Modern Tactics ---------- Col. Robert Homne.
Soldiers' Hand Book ---------- U. S. Army.
Special Operations of War ---------- Francis J. Lippitt.
The Brain of an Army ---------- Spencer Wilkinson.
The Enlisted Soldier ---------- Lieut. A. A. Woodhull.

APPENDIX.

Weight Carried by United States Foot Soldiers when Equipped for Field Service.

THREE DAYS' COOKED RATIONS.

	Pounds.	Ounces.
Bacon	2	4
Hard bread	3	
Coffee	--	3.84
Sugar	--	7.2
Salt	--	1.92
Pepper	--	.12
Total	6	1.08

CLOTHING.

	Pounds.	Ounces.
2 pairs socks	--	8
1 woolen blanket	5	
1 rubber blanket	2	8
1 undershirt	1	1
1 pair drawers	--	12
1 pair shoes	2	12
1 flannel overshirt	1	8
1 overcoat	6	10
Total	20	11

EQUIPMENTS.

	Pounds.	Ounces.
1 blanket bag (including coat and shoulder-straps)	2	5.5
1 canteen and strap	1	1.5
1 haversack and straps	--	15
1 meat can	--	15
1 tin cup	--	8
1 knife, fork and spoon	--	8
	6	5

MISCELLANEOUS.

	Pounds.	Ounces.
100 rounds rifle ball cartridge	10.7	
Springfield rifle	8	10.88
Springfield bayonet	--	12
Springfield bayonet scabbard	--	10.5
2 McKeever cartridge boxes	1	3
Leather waist belt and plate	--	8
The weight of rod-bayonet rifle is	9	4
The weight of woven cartridge belt and plate is	--	13.5

TOTAL WEIGHTS CARRIED BY UNITED STATES FOOT SOLDIER.

The weight carried by the soldier equipped with rod-bayonet, rifle, woven cartridge belt, three days' cooked rations, 100 rounds of ball cartridge, and complete kit of clothing is 53 lbs. 2.58 oz.

The weight carried by the soldier equipped with Springfield rifle, bayonet, bayonet scabbard, cartridge boxes, and leather belt, as well as above clothing, ammunition, etc., is 54 lbs. 1.85 oz.

The weight carried by the soldier equipped with Springfield rifle, bayonet, bayonet scabbard, woven cartridge belt, as well as the above clothing, ammunition, etc., is 53 lbs. 15.96 oz.

Weight of all Articles Carried by Foot Soldiers in Foreign Armies

Countries.	Armament.		Clothing.		Total.	
	lbs.	*oz.*	*lbs.*	*oz.*	*lbs.*	*oz.*
Russia	17	9.5	17	2	63	2
Germany	20	--	17¾	--	52	
France	19	--	19	1	64	
Austria	18	4	20	10	56	
Italy	17	12	--	--	61	4
England	18	7	--	--	62	5

The	Russian	soldier	can	carry	84 cartridges.
"	Italian	"	"	"	88 "
"	English	"	"	"	70 "
"	Austrian	"	"	"	70 "
"	German	"	"	"	100 "
"	French	"	"	"	78 "

LECTURE NO. 5.

BY BREVET COLONEL LOUIS H. CARPENTER, MAJOR FIFTH CAVALRY, U. S. ARMY.

Grand guards and outposts; reconnoissances and scouting.

Assuming that the troops, of which you are a part, have reached the point designated to be occupied and held by them, and that while on the march the columns have been properly protected by advance and rear guards, it follows that after the halt the first precautionary measure would be the establishment of outposts.

THE OBJECT OF OUTPOSTS.

Outposts are covering detachments sent out, and carefully posted, to guard the camp from surprise.

The safety of an army depends on the watchfulness of its pickets, and it may be said that of all the duties of a soldier none are more arduous, more severe, or more important. No matter how hard and exacting the work may have been in fighting or marching, when the troops come to a halt the sentinels have to be posted, the patrols have to be made, and sleepless vigil kept, to prevent an active foe from obtaining an advantage. By having a portion on guard, the majority of the troops, fatigued, wearied, and worn out by exertion, may enjoy their brief hours of rest without being harassed by the necessity of constant watching or disturbed by trivial alarms, or having ever present the dread of a sudden surprise. They feel secure in the knowledge that the outposts will

perform their duty, give timely warning of the approach of the enemy, and then resist his advance, slowly and obstinately, until the troops can make proper dispositions for his reception. Were it not for the rest thus obtained, no troops could possibly stand the strain to which they are necessarily subjected in an active campaign, and, in view of the great importance of the dependent results, nothing can excuse neglect or carelessness that would jeopardize the safety and security of the camp.

Where the outposts have been judiciously posted and proper care exercised, attempted surprises are unsuccessful—nothing happens, and there is nothing to tell; but instances are frequent in all wars of disasters clearly due to a faulty disposition of the pickets or culpable neglect on their part. A notable case was the rout of the Union forces early in the morning of the 19th of October, 1864, at Cedar Creek, in the Shenandoah Valley. The outposts had been placed so that they did not properly cover the left flank of the army, and the Confederate commander was enabled to mass a column close to the Union troops on that flank without being discovered, and to make a sudden assault completely surprising them. Some of the men were found asleep in the camps, and the whole force fell back some miles in great confusion until Sheridan finally took measures that recovered the day and wrested victory from defeat.

The object of outposts is to ensure security and rest for the army, and in addition to obtain information of the enemy. These purposes are to be effected:

1. By thorough observation, to discover the approach of the enemy, and by timely warning to give notice of the danger to the main body.

2. By resistance, made in the most stubborn manner possible, to give all the time necessary for the main body to make dispositions to engage the enemy.

3. To prevent the reconnoitering parties of the enemy from obtaining information with regard to the position or force of the outposts or main body.

4. To obtain all the information of the enemy possible by means of patrols.

THE STRENGTH OF OUTPOSTS.

The first thing to consider must be the strength of the outposts. The number of men to be detailed for outpost duty must, of course, be governed by the necessities of the case. The size of the command, the front to be covered, the character of the country, and the location of the enemy are also elements in the problem. The principle is to use as small a fraction of the force as possible to properly perform the duty, and it is rarely necessary to take more than one-sixth of the effective strength.

It is now considered better to use entire companies, battalions, or regiments for outpost duty rather than mixed details from the command. The sentinels can then fall back on the pickets, and the pickets on the supports without the men and officers finding themselves mixed up with strange commands, to whom they are unaccustomed, and they can be rallied and re-formed much easier and more quickly by their own officers than by strange officers. In armies of considerable size each division would generally be called on to picket its own front, and as this would probably extend a mile or two, it would require a regiment of infantry with double sentinels posted 100 to 200 yards apart. The colonel of the regiment would have command of the line, and two miles is certainly as long a line as one officer should have charge of. In this case the sentinels would unite on either flank with troops sent out from other commands, and an understanding must be had to insure concerted

action throughout the entire line. If the forces are much extended it may be expedient for each brigade to detail a battalion to furnish the outposts for its front, connecting with others as described. If possible a small detail of cavalry should be made, to be under the orders of the officer commanding the outposts, for patrol duty and reconnoissance, and in some cases a battery or section of artillery will be needed to take up an advantageous position to strengthen the line.

If the country is broken and of a character to offer positions of strong defense by small parties, the strength of the detail for outposts could be reduced; but if the country is generally open, it should be strong. In regard to the composition of the outposts, there is no duty in which cavalry can be combined to better advantage with the infantry. Cavalry, on account of its celerity and peculiar qualities, can scout the country to a considerable distance, obtaining information of the strength, movements, and intentions of the enemy, and sending reports back rapidly, while the infantry holds the lines of resistance, keeping back and retarding the hostile advance.

THE POSITION OF OUTPOSTS.

The distance of the outposts from the army will generally be determined by the fact that the main resistance must be made at a point some distance beyond effective artillery range from the camp. The commander must carefully select this line of resistance upon ground where he can make a good defense, and if necessary the other lines of the outposts must be made to conform thereto. The distance now required is somewhat greater than was required during the war of the rebellion, in consequence of the improvement in the precision and range of small arms and light artillery. The outposts must be placed to cover the front and both flanks, unless it

may happen that either flank rests upon an impassable obstacle, like a river.

THE SYSTEM OF OUTPOSTS.

The outposts should be arranged in the following lines:

1. The line of sentinels, or line of observation.
2. The line of pickets.
3. The line of supports, or line of resistance.
4. The reserves.

It is proper to state that the above arrangement differs from the nomenclature used in the U. S. Army Regulations. In the authorized text book now in use at the Military Academy, written by Captain Mercur of the Engineer Corps, the old terms are discontinued, as he considered them indefinite and obsolete. The following comment is made: The term "grand guard" was the term for all the outposts; the term "picket" was applied to a special detachment held ready for immediate service, known generally as an "inlying picket;" and the terms "small posts" or "advanced posts" included the groups usually known as pickets. The proposed new infantry tactics also adopts the nomenclature given above, and drop the ceremony of "grand guard mounting," as the marching of entire organizations on outpost duty will do away with the necessity.

When the command is small the reserve is often dispensed with, although the greater distance at which the outposts have to be placed would perhaps render it more prudent to strengthen the line by using the reserve and thus make a more obstinate resistance possible. It is claimed, however, that sometimes the stand would be made too long in consequence of this capability of making a better fight instead of giving way and falling

back when sufficient resistance has been made to accomplish the desired object. In order to make the details as light as possible, it is recommended that certain detachments, known elsewhere as "inlying pickets," with orders to be in readiness to move at a moment's notice, be encamped in convenient positions and act as reserves if needed, although they would not be considered as part of the details for outpost duty.

POSTING OUTPOSTS.

The General determines the strength of the outposts, and the officer commanding the battalion or regiment detailed for the duty reports to him for orders. Upon consultation of a reliable map, or by knowledge obtained through a reconnoissance, a line is selected approximately and general instructions communicated. If it is necessary, directions are given in regard to connecting with other commands on the right and left. The commander is also informed of everything known in regard to the location and movements of the enemy and so much of the general situation as it is proper for him to be acquainted with. If a field officer of the day is detailed it should be the officer commanding the outposts, or otherwise the field officer of the day should only be used to convey the orders of the General, like a staff officer. As there is no apparent necessity for a field officer of the day under the present system, the detail should be discontinued. The officer to command the outposts after leaving the General should, if possible, make himself acquainted by personal experience with the topography of the ground upon which he is to operate ; or, if this is not practical, then by a study of the best map to be procured. He should then select a line of resistance sufficiently distant to give time necessary for the main body to take position and prepare for action; also a line of

observation in advance of the line of resistance, upon which to station the sentinels, selecting a ridge or other ground affording a favorable position for observing the country.

The strength of the reserve should be settled and its position in rear of the line of resistance determined upon. The troops detached for the outposts should then be carefully inspected and the officers informed as to their stations and duties and given any general instructions necessary to impart.

The command, having broken into column, will proceed to the place designated, throwing out advanced guards and flankers. Upon nearing the ground, detachments, each including a support with its pickets, will be marched off towards the positions they are to occupy, which would be at some point on the line of resistance, advancing cautiously with advanced guards and flankers. On their arrival, the pickets will be detached in each case, and proceed forward with increased caution until they are close to the line to be occupied by the sentinels. A few skirmishers or a reconnoitering patrol of three or four men should then be sent out in the direction of the enemy to conceal the disposition of the sentries. Having halted their pickets, the commanders post their line of sentinels "hastily at first," with a view to covering the front rapidly and to establish communication at once from one flank to the other of the line. The line itself can be altered or corrected subsequently by the commanders of the outposts, if it be necessary, and the picket commanders should then conform thereto and make final corrections of the positions of their sentries. The reserve is marched to the place selected for it. It is usual for the whole of the outposts to remain under arms and on the alert until the arrangements are completed.

SENTINELS.

The line of observation on which the sentinels are posted should be carefully selected, so as to give the best possible opportunity for discovering the approach of any hostile party without themselves being seen. "In hilly countries crests nearly parallel to the front occupied afford most favorable lines, and sometimes command a large extent of country." In case there are woods on the line, the sentinels should be posted on the outside edge, but not far within if it can be avoided. If on the hither side, they should be placed from five hundred to eight hundred yards from it. Care must be taken not to post sentinels in advance of the general line so that there is danger of their being cut off. The sentinels are posted double—that is, two on each post, and at distances which should not exceed two hundred yards. They are thus posted so that one can move a short distance toward the next post, if necessary, or convey important intelligence, while the other remains on watch. The sentinels should be in view of the posts on their right and left, and of the post stationed at the picket. From two to four double posts are relieved from one picket, usually about three. If the country is broken and it is difficult or impossible for the sentinels to see to the right or left, it may be necessary to place "detached posts," consisting of a non-commissioned officer and from three to ten men, upon positions that may be important for guarding an exposed flank, a bridge, a traveled road, coming in from the direction of the enemy in rear of a flank, &c. If the sentinels cannot see the post at the picket, one or two connecting sentinels must be posted in positions which will enable communication by signal to be made. In such cases only one sentry is needed. In

a detached post one or two men are on duty watching while others are close at hand. If the point to be occupied should be well to the front, the post would be of cavalry, consisting usually of a non-commissioned officer in charge, and three men. In the foreign services these are known as Cossack posts, and are much used. The method of posting sentinels that has been described is called the cordon system of posts, and it is the best when the country is more or less open and for day service. If the line is near that held by the enemy and there is a habit of firing between the sentinels, some cover should be made of a temporary character for protection, concealed by brush or trees. The general idea is to see without being seen, and to make it impossible for any one to enter the line without being discovered.

Only one person should be permitted to advance on any post at a time. Deserters from the enemy should be made to lay down their arms, and persons not provided with passes or permits should be held and turned over for examination by the officer commanding the picket. If the order to halt is not obeyed, the party should be fired upon. The sentinels must be informed of the direction of the enemy and his probable line of advance, the position of the sentinels to their right and left, the number and position of the picket, and what they must do in case of an attack.

Some signals must be agreed upon and understood clearly, in case there is anything of importance to impart. Each sentry must be informed that on his vigilance depends many lives as well as his own. The sentinels are relieved every two hours, unless in severe weather or under exceptional circumstances, when they should be relieved hourly. They should not fix bayonets, as the glitter would be seen a long distance. They should

be informed when reconnoitering patrols leave the lines and where and when to expect their return. The countersign is given to them. On the approach of a flag of truce from the enemy, it will be halted before the position can be seen, if possible. The officer commanding the picket will then be summoned, and the flag of truce will be detained until instructions are received from the officer commanding the outposts. If the flag of truce is to pass, the different individuals must be carefully blindfolded and led under escort to the commander. There must be no conversation, and care must be taken that the party does not gain information "en route" which may be of service to them.

It is the custom in Europe to place an examining post in, or close in rear of, the line of sentries, on traveled routes, consisting of an officer, or selected non-commissioned officer, and six privates, for the examination of all persons wishing to pass in or out, orders being issued that none should be examined at any other place on the line.

PICKETS.

The sentinels are relieved from the pickets, which are placed in advantageous positions, concealed from the enemy, near frequented roads if possible, in the rear of the line of observation and at a distance which should generally be not more than 400 yards from the farthest post relieved from it. A suitable strength for a picket is from twenty-five to fifty men, depending on the requirements. It is divided into three reliefs, so that six men are required for each double post. If four posts are relieved from the picket, this would take twenty-four men. In addition, a visiting patrol of a non-commissioned officer and two men is necessary to frequently patrol between the posts, and a relief would make two non-commissioned officers and four men.

One post at the picket over the arms, who can also watch the sentinels, would be three men, and three men for each connecting post, if any of the sentries cannot be seen from this place. If a detached post is required to occupy some position, the detail would consist of a non-commissioned officer and from three to ten privates. The reconnoitering patrols to operate in advance of the lines would take six men more. The number to be told off usually for duty from a picket would be—

	Non-coms.	*Privates.*
3 double sentinels and their reliefs	2	18
1 sentinel over arms and relief	--	3
1 connecting sentinel and relief	--	3
1 visiting patrol and relief	2	4
2 reconnoitering parties	1	6
	5	34

At least two-thirds of the picket should be ready for duty at a moment's notice, and if fires are permitted they must be concealed so that they cannot be seen for any distance. The men may be allowed to smoke and lay aside their packs, but their arms must be close at hand. It may often be necessary to have the meals prepared at the support and brought to the position occupied by the picket, or in other instances the men must be contented with cooked rations. A general principle that must be observed in selecting the ground for the picket is that it must be favorable for advancing or retreating, to permit of properly supporting the sentinels or falling back upon the support in case of an attack. A visiting patrol of a non-commissioned officer and two men will visit the picket posts of each relief during the day, especially in cloudy or bad weather, and frequently during the night. This patrol will on its rounds visit also the posts connecting on the right and left, will

ascertain whether the sentinels are alert and well instructed, whether anything unusual has been heard or discovered, and will report on its return to the officer commanding the picket the result of its observation. Small reconnoitering patrols, consisting as a rule of a non-commissioned officer, or old soldier, in charge, and two or three men, should be sent to the front occasionally to obtain information, but should not go farther than from one-half a mile to a mile. The conduct of these patrols will be described under the head of reconnoissances. As has been stated, detached posts of a non-commissioned officer and from three to ten men may be stationed to guard an exposed flank or to maintain communication between pickets lying far apart on account of broken ground. These posts must be visited by patrols occasionally during the day and frequently during the night.

NIGHT DISPOSITIONS.

As darkness comes on, the arrangement of the pickets and sentinels must be changed in order to avoid surprise and capture by reason of information the enemy may have gained during the day of their location. As any large body of the enemy advancing at night would be forced to keep the roads, and would find it almost impossible in a cultivated section, to move across the country in the face of obstructions, added to the danger of losing their way, it is recommended by some of the best authorities to give up the cordon system of sentinels to a great extent at dark and place posts on the traveled routes with the pickets close in their rear. If the line of sentinels is to be retained in whole or in part, they should be drawn in and placed so that objects can be seen against the sky. The patrols should visit the posts frequently, and, by moving silently and cautiously

and stopping to listen, endeavor to discover any movement near them. The outposts should be under arms an hour before daybreak, and then if everything appears to be quiet the positions taken up during the day should be resumed.

THE SUPPORTS.

The line for resistance having been carefully selected, usually about five hundred yards in rear of the pickets, the supports are placed at convenient and desirable positions on it. One support to every two or three pickets is sufficient, and the whole strength of this line should be about equal to the combined strength of the pickets and sentinels in front. It should consist of one or more companies of the same organization that furnishes the pickets, and the commander of the support should have a clear understanding with the officers commanding the pickets in his front, so as to insure a proper concerted action in case of attack. As the principal stand against the enemy would generally be made on this line, it should be some distance beyond ordinary effective artillery range from the main body or camp, and a proper allowance has been estimated to be about two and one half miles. If the ground is to be held, and there is plenty of time, the line should be strengthened by preparing light entrenchments. Some good positions in rear should be selected, favorable for making a stand when compelled to fall back. The men on duty in the supports can have fires, usually do their own cooking, and sometimes that for the pickets, but must be ready to take arms at the shortest notice.

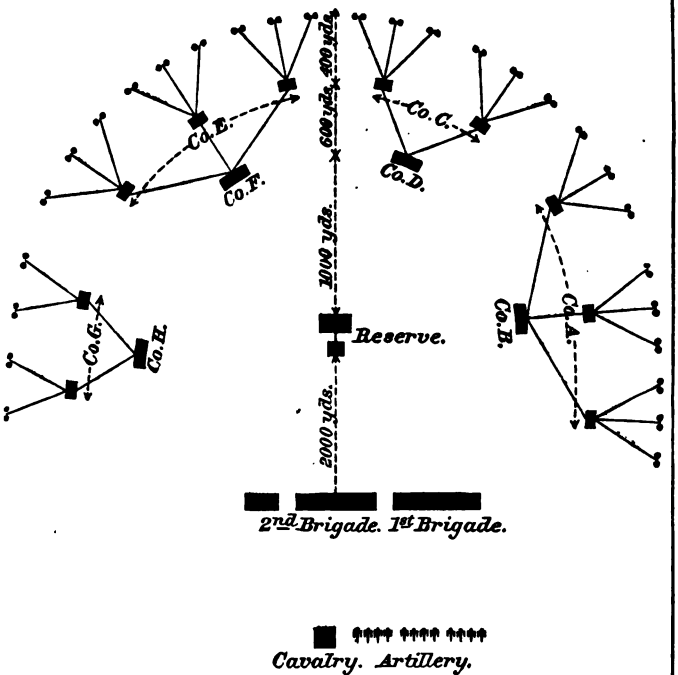
THE RESERVE.

The reserve, consisting of about one-third of the whole strength of the outposts, should be posted from 500 to

800 yards in rear of the line of supports and as near their center as may be possible, to secure an advantageous position. In case of an attack the reserve reënforces the supports at the line of resistance or is held to be used where and when needed. The commander of the outposts should be stationed with this portion of the troops, but if a reserve is dispensed with, then with one of the central supports. He should communicate to his subordinate commanders all information that he may have regarding the enemy, the lines to be occupied by day and by night, the numbering of the pickets, measures to secure the flanks, the countersign, dispositions in case of attack, where he is to be found, how flags of truce and deserters are to be received, and directions in regard to patrolling. A small force of cavalry should be stationed at the reserve, or at one of the supports, to furnish patrols and to carry information rapidly. Some pieces of artillery can often be posted to advantage on ground in rear of the line of resistance, toward the flanks.

Plate VI shows the posting of a regiment of three battalions of infantry on outpost duty to cover the front of a division. One battalion constitutes the reserve, one battalion the right section, and one battalion the left section. Each section should be under a field officer. In the right section B and D companies are the supports, and A and C the two companies furnishing the pickets and the sentinels. In the left section F and H companies are the supports and G and E provide the pickets and sentinels. The sentinels are on the line of observation, and H, F, D, and B companies are on the line of resistance. It will be noticed that some of the pickets furnish two sentinels, some three, and some four. This would be determined by the character of the ground, and

MANNER OF POSTING A REGIMENT OF INFANTRY ON OUTPOST DUTY TO COVER THE FRONT OF A DIVISION.



the strength of the picket would be affected accordingly. A regiment of three battalions could observe about two miles of front and its colonel would be the officer in command of this portion of the outposts. This shows the theoretical distribution of the troops in accordance with the system I have described; but practically the ground is usually too much broken to permit such regularity.

Plate VII shows outposts consisting of a battalion of four companies of infantry. Numbers 1, 2, 3, and 4 are the pickets, with the line of observation beyond. The supports of one company each are placed in rear, two companies furnishing the pickets. In this case no reserve is needed. The officer in command of the battalion, being in charge of the outposts, has his headquarters at one of the supports.

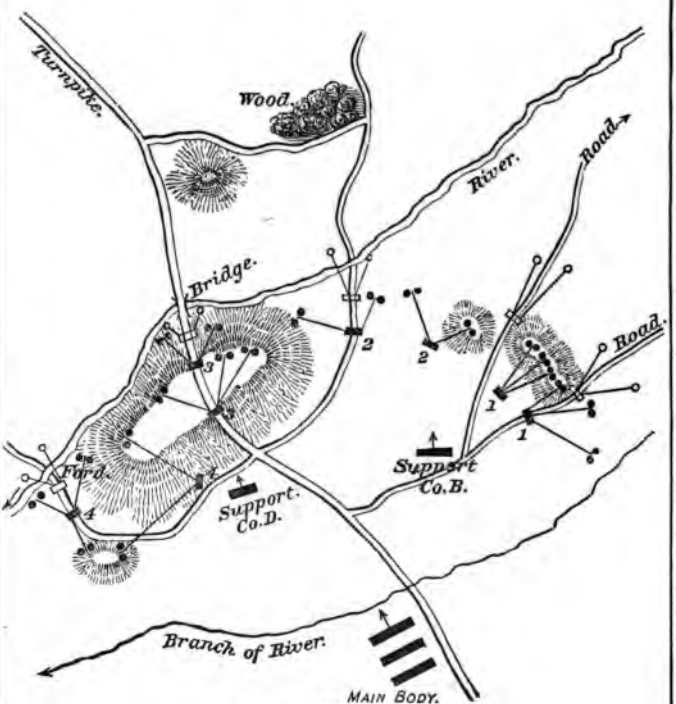
In the dispositions for the night the cordon of sentinels is withdrawn, the pickets are pushed out on the roads, with posts placed to the front and sentinels a short distance beyond. The route passed over by the visiting patrols at night is shown, and reconnoitering patrols move to the front on the different roads.

CAVALRY OUTPOSTS.

In some cases where it is necessary for cavalry to furnish the outposts the same system is adopted, but the distances between the lines, as well as that to the main body, are much greater. The supports should be from twelve hundred yards to a mile from the reserve, and about twelve hundred yards from the pickets. The latter would throw out, on a line of observation, posts of double vedettes, about 500 to 800 yards distant, each picket watching a line of about 1,500 yards front.

In forming a line of outposts it is not thought advisable to have cavalry hold a portion in connection with

A BATTALION OF INFANTRY (4 COMPANIES) ON OUTPOST DUTY.



infantry, as, owing to the smaller power of resistance on the part of mounted troops, they might be driven back, leaving the flank of the infantry exposed.

If the cavalry force available is large, a screening veil of mounted outposts is sometimes placed some distance to the front, but it is the best policy generally to save the cavalry by having the ordinary outpost duty performed by infantry, assisted by a small force of cavalry to serve on detached or Cossack posts, pushed in advance, and to act as patrols to scout the country thoroughly from five to ten miles beyond the infantry sentinels.

TO RESIST OR DELAY A HOSTILE ADVANCE.

An attack made on the sentinels is announced by their firing. A portion of the pickets should be immediately sent to reënforce them, and if it proves to be more than a patrol of the enemy, the line should fall back slowly on the line of retreat previously settled upon. The commanders of the picket will resist until the opposing force is too strong, or there is danger of the flanks being turned, when they will continue to retreat, making occasional stands on ground already noticed as favorable for the purpose, until the line of resistance is reached. The commanders of the supports should deploy them in skirmish order in proper time and be ready for a determined and obstinate defense. This will be facilitated by any slight trenches or temporary defenses that may have been prepared. Information of the attack having been promptly sent to to the commander of the outposts, he will send notice as rapidly as possible to the General commanding the main body. The reserve will now reënforce the line of resistance or will do so on a second line selected for the purpose. If the line of supports is placed about two

and a half miles from the army, it would probably take about an hour before the outposts could be driven to a point from which the troops could be shelled. This would give time for the troops in the rear to prepare for action, but care should be taken that the defense of the outposts is not so prolonged as to compromise them too much. By giving way in time to avoid this, the object desired will probably be attained without undue loss, or making it necessary to send in other troops to extricate them.

DRILL.

An exercise or drill is recommended to properly instruct troops in outpost duty. A piece of open country or a large drill ground should be selected, where all of the dispositions made can be seen and understood by every one. A regiment of three battalions, two battalions, or one battalion of infantry of four companies could be taken, as would appear most advisable, according to the ground or front available.

The commander would acquaint his officers with their stations and give them the general instructions required. The detachments would march to their proper positions, as has been described, taking all of the precautions that they would in the face of the enemy. The sentinels should be posted and instructed and the necessary details made by the pickets, including proper patrols. The sentinels should be relieved and regularly visited by patrols. If thought best, the reserve could be dispensed with and the headquarters of the commander established at one of the supports. It would be good practice to have several non-commissioned officers or intelligent men supplied with flags to represent the enemy by a skeleton line. They should be directed by a competent officer, who should also act as umpire. The troops

should be provided with blank cartridges. Upon the commencement of the attack the sentinels are reënforced by the pickets, and the line falls back, making frequent stands to the line of resistance. If the umpire judges that the resistance is sufficient to retard his advance, he causes his men to halt and lower their flags. When in his judgment they can advance he causes the flags to be raised, and the lines must continue to retreat. Faulty dispositions and management would become very apparent in this way. In portions of the line the advance of the enemy would be sufficiently delayed, owing to bad handling, while in other portions everything would be right. At the termination of the exercise the commanding officer should criticise the drill and instruct those who make mistakes or commit errors, so that they would avoid them on the next occasion.

RECONNOISSANCES.

Having considered the measures to be taken for the security of the army while halted, it is proper to discuss the methods usually adopted to obtain information concerning the enemy, which a commanding general must possess before he can act understandingly or with any assurance of success. This knowledge must be obtained through reconnoissance, which may be placed under two heads:

1. Reconnoissance of the enemy.
2. Reconnoissance of the country.

1. RECONNOISSANCE OF THE ENEMY.

The reconnoissance conducted from the outposts to examine the front is usually performed by small infantry and cavalry patrols, the former rarely going more than a mile beyond the sentinels and the latter from five to ten miles.

SMALL INFANTRY PATROLS.

The strength of patrol should depend on the duty required of it, but as the party is expected to see as much as possible without being discovered, the smaller it is the better. A patrol should consist of not less than three men, a non-commissioned officer or old soldier being in charge. The men should be intelligent and sharp, and picked for that reason. The commander should have coolness, cunning, and aptitude for the duty, should clearly understand his instructions and what is required, and if anything is not clear, should ask for explanations until it is so. The ammunition should be inspected, the condition of the shoes examined, and everything that would glitter should be removed or fixed so that it will not. The men should be taught some signal, by which to communicate with each other when at a distance and at night, for which purpose a whistle is recommended. They should move one behind the other, the senior in the center, with the leader fifty yards ahead and the remaining man thirty yards in rear. If the ground is open, one man can move on a dangerous flank, and the greatest care must be taken to conceal the party and avoid discovery. Fences, ditches, and every object that can afford cover must be utilized. The men must move rapidly across an open stretch and make for the next point that is favorable. In a close country the party must be on the alert and keenly watchful, as an enemy may be concealed behind any hill or rocks. In passing roads, time should be taken to examine them for a short distance, a couple of men being sent for the purpose. On approaching hills, one man should go to look around the flank of it, if practical, and one man should go to the top and look over it without showing himself. If either makes a sign indicating that he sees something

the commander immediately joins him and finds out what its importance may be. In approaching woods, if it is a grove or small woods, the leading man moves along the edge and the commander follows a short distance inside, looking in. If he sees nothing they both enter and proceed to the farther edge, while the third man moves around it and rejoins them. If it is a large woods a small patrol can do little more than examine the border and try to discover any signs of people moving in or out, and carefully listen for any movements within. If the road runs through, they should look well to the front and closely through the trees to the flanks.

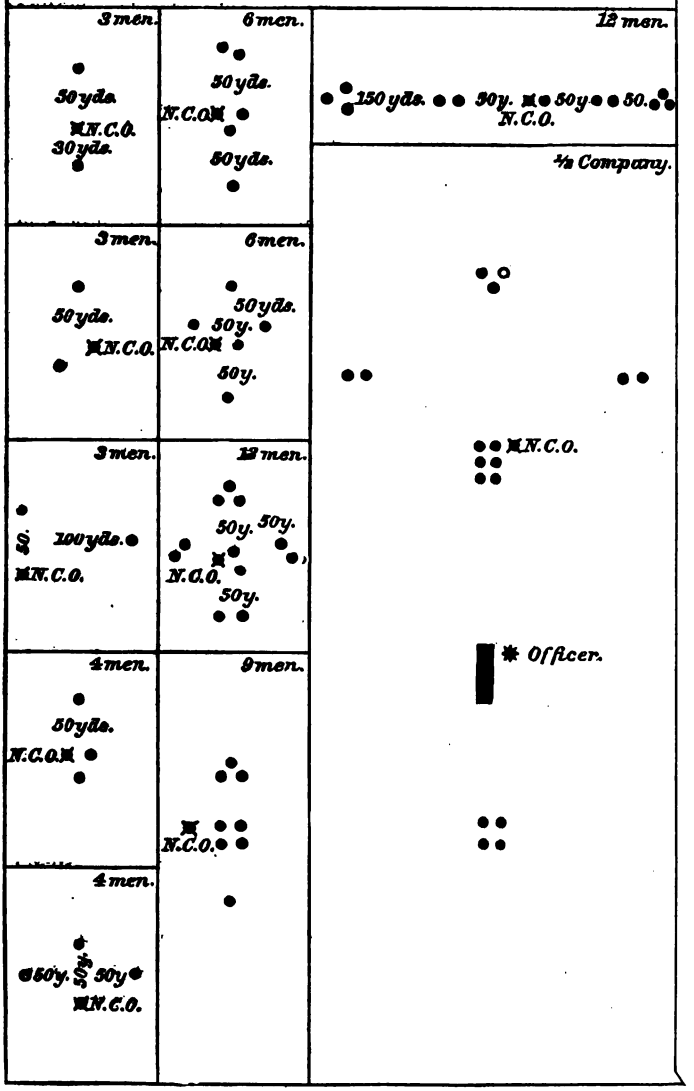
On approaching a village no attempt should be made to enter until it is ascertained that no enemy is within. One of the inhabitants of a house outside should be questioned, or if possible a child, because children will generally tell what they know. If everything appears safe, the two leading men go through, the third following some distance in the rear. This is to give a chance for at least one man escaping in case any are captured. If the enemy is discovered at any time, he should be carefully watched and an estimate made of his strength and object. If the enemy should be approaching, the patrol must withdraw from the road and conceal themselves, and if the matter is important, as soon as everything is safe a messenger must be sent with the information, in writing if possible. If four men are in the patrol, two can be kept with the leader, one in advance, and two used as flankers. With five, two can be placed in the front like the point of an advance guard, and so on, as the strength of the patrol increases, its formation would assimilate to that of a column of troops "en route." The leading men and flankers would be moved by concerted signals from the commander.

It may be laid down as a rule that a secret or stealthy patrol should not show itself or fight, but if of greater strength it should often push boldly up to the enemy's sentries or patrols and attack them on occasion. "When a patrol of any strength arrives near the enemy it must rather extend than contract its front, even at the risk of one or two men being cut off. No proper reconnoissance can be made without this extension. Should the patrol be attacked when in extended order, it would be in better condition to defend itself at once, every rifle being in the front line. If the patrol is overpowered, there is better chance for one or more getting off." If the country is rough, broken, or mountainous, infantry patrols are the best.

CAVALRY PATROLS.

The most thorough and distant reconnoitering should be performed by cavalry. Secrecy and celerity are essential, and the characteristic qualities of the mounted service come well into play in the performance of this duty. As large patrols often make duty hard and would quickly use up the horses, the details should be as small as is consistent with the duty expected of it. The small patrols sent out from the outposts to reconnoiter the front should be composed of a non-commissioned officer and about three men. When sent by the General with special instructions, they should be strong enough to make head against similar parties that the enemy might be sending out. The horses should be carefully inspected to see that they are all in good condition and well shod, and they should be fed and watered before starting out. The quantity of rations to be carried should be considered, and also whether any grain should be taken on the horses. The general rules that have been described for the management of in-

FORMATION OF SMALL INFANTRY PATROLS.



fantry patrols apply in this case. Two or three troopers should ride in advance about one hundred yards and a few men about the same distance in rear of the main party. Flankers can be dispensed with when not necessary, but usually they will be required. Where there are but few men they are marched the same as infantry, the leader about one hundred yards in front, to avoid the risk of all being cut off in case of surprise. Signals should be determined upon. The following are recommended by Shaw in the English service:

"To advance"—	A wave of the hand in the right direction.
"To ask for reinforcement"—	The cap (or hand without the cap) held up over the head and waived with a circular motion.
"No enemy in sight"—	Carbine, with or without cap, held up perpendicularly.
"Enemy in sight"—	Carbine held up horizontally.
"Enemy in small bodies"—	Carbine held up as above, steadily.
"Enemy in strong bodies"—	Carbine lowered and raised.
"Halt in rear"—	Hand held up steadily above either shoulder.

The use of the whistle for night work with cavalry is recommended. The traveled routes should be avoided, as the object is to get as near the enemy as possible. If a hostile force is seen on the march the party should be kept out of sight, if possible, and the column reconnoitered to discover its strength

and direction. The time that cavalry, artillery, or infantry take to pass a certain point will give the data for an approximate estimate of the numbers of each. Cavalry moving makes a high dust; infantry, a thick, low dust; artillery and wagons raise dust in clouds, but broken. If the glitter from the arms is steady, the troops are advancing; if it is only seen occasionally, they are probably marching away from the observer. In clear weather the march of a small column of infantry can be heard a few hundred yards off; cavalry much farther, especially if traveling on hard ground. The sound is heard at a greater distance in case there is frost. A splendid opportunity is often given for the officer in command to obtain important and valuable information through energy, endurance, and dash. He should also have good judgment and shrewdness, and be quick in deciding upon his course, and must rely upon his own resources in the emergencies, which are sure to occur. Care must be taken that the reports sent back are carefully considered and thoroughly reliable. If the cavalry patrols are of any strength, scouts of two men each should be sent out to ride some distance to the front and to the flanks, if expedient. One of the two men of each of these small scouting parties should be in command, and one may be sent occasionally to the main party to convey intelligence. These men should not lose touch with their support, remaining within sight by day, or hearing by night. They should not fire unless there is no other way or time to give notice of the enemy and they feel certain they have been seen. The object will be to search for the foe, estimate his numbers and observe his movements; to approach close to the hostile outposts and examine the dispositions; to defeat the efforts of the enemy to obtain information by surprising

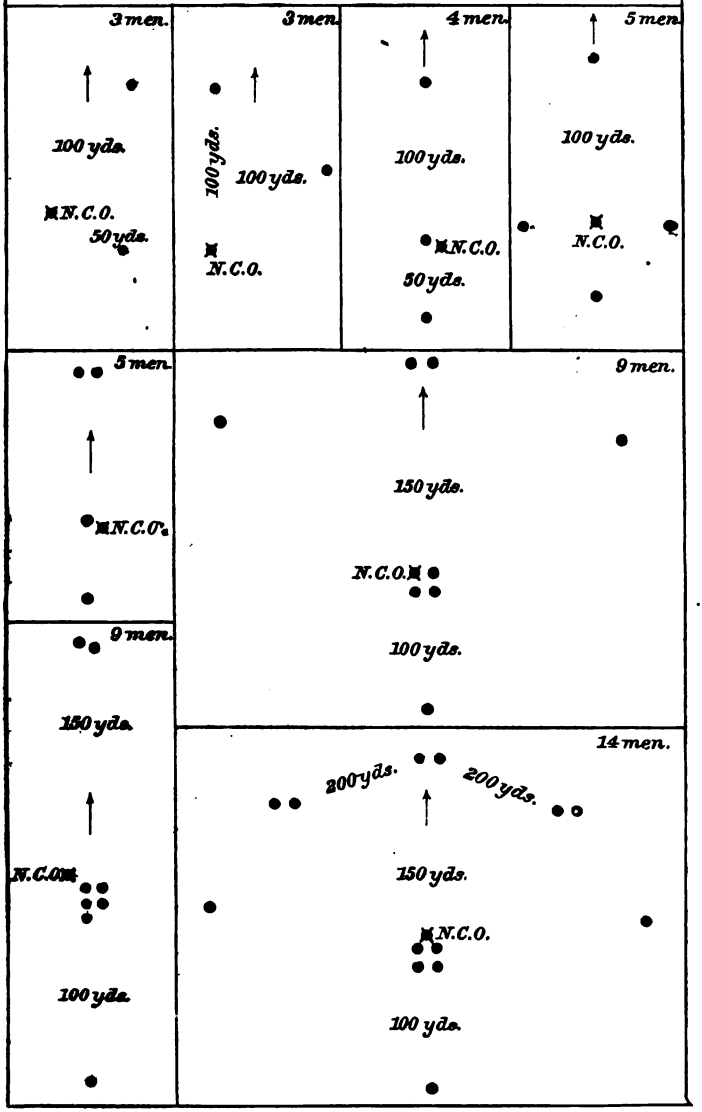
and driving back his patrols. Prisoners should be taken if possible and examined with the hope of gaining some knowledge that will be of value. Small patrols should be suddenly and unexpectedly attacked for this purpose, but engagements with large parties should not be undertaken for this reason alone. In a comparatively open country the scouts of two men should be pushed out boldly on all of the roads to the front and on the flanks, and the main body should move on some central line at a distance sufficient for support. The scouts will quickly report the enemy if he is discovered, and the patrol will thus have notice in time to avoid surprise. Unnecessary hard work on the horses will be avoided by this system, and the majority of the animals will be fresh and in shape for any work that may be required. If the enemy's scouts are reported, an effort should be made to drive them in and see what may be developed behind them, and if the hostile support is not too strong it is often the most effective to push back the line with the patrol united and attack the enemy's main party at once. If the enemy's strength is too great to attack, the scouts watch his movements, and, if pressed back, retire slowly, uniting near the infantry. If the enemy's infantry is met, it can be observed after withdrawing beyond range. The points to observe in connection with the hostile position are—

1. Where the sentinels are posted and whether all points are watched.
2. Whether the outposts appear vigilant.
3. Where the main force of the enemy is located.

Any information obtained should be sent back as soon as possible to the superior officer, to whom the commander of the scouting party reports. The enemy is prevented from gaining similar knowledge by the activity and good management of the patrols and scouts. *(See Plate IX.)*

PLATE IX.

FORMATION OF SMALL CAVALRY PATROLS.



THE RECONNOISSANCE IN FORCE.

When the hostile outposts are watchful and small parties fail in gaining information of vital importance, strong detachments, composed of cavalry, artillery, and infantry, advance with the object of developing the enemy and discovering his position. The outposts are driven back upon the main body, compelling the troops to deploy and the artillery to open, thus showing the ground that the enemy occupies, its extent and strength. Staff officers accompanying the reconnoissance are enabled to gain information from which the commanding General can form his plans and take action. The knowledge thus obtained should be used without delay; otherwise, in most cases, the enemy would be found to have changed his disposition and arrangements.

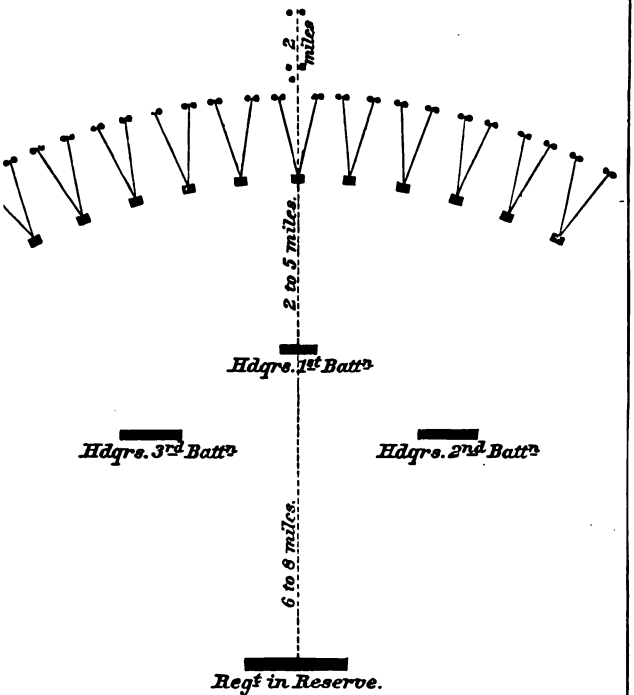
SCREENING DUTY OF CAVALRY.

During a march large bodies of cavalry are now sent to the front from fifteen to twenty miles, and are deployed to cover a front of five or six miles to a regiment. Small scouting parties are in advance, supported by patrols, and these by larger supports, on which to fall back in case of necessity. This forms a screen which prevents the enemy from discovering the movements of the troops, or harassing them, and through this system a touch with the hostile forces is kept up and every move is reported as quickly as couriers can carry it. (See plate X.)

2. RECONNOISSANCE OF THE COUNTRY.

In addition to the reconnoissance of the enemy, maintaining contact with him and obtaining information of his movements, there is also the necessity of being informed as to the character of the country and its topographical features. This is done most effectually by small scouts, known as officers' patrols, consisting of a

A REGIMENT OF CAVALRY DEPLOYED FOR SCREENING DUTY.



few men who accompany an officer selected especially for the purpose, and all should be exceptionally well mounted. The scout sent for this purpose should gain as quickly as possible some position in the country, in advance of the army, from which a good view of the region can be had; here a hasty topographical sketch will be made by the officer, and all important points represented thereon. By cautiously moving to the flanks of the enemy's position he may be able to find an opportunity to obtain important knowledge of the ground occupied, and of that immediately in the front, over which any troops must advance to the attack—any ravines, woods, or water-courses that could afford cover favorable for either side.

It will be apparent that the officer and men selected for this duty should be good horsemen and men of nerve, in addition to the skill required of the leader in the preparation of his topographical work. It may be necessary to regain their own troops by circuitous routes, and sometimes to make their escape by the speed of their horses. The party should be very small, as a few men can slip through the country without being seen, while a large body could not escape attention and most likely attack. One of the German writers speaks of an instance "where a squadron was sent out by one force and an officers' patrol by the other, each for the purpose of gaining information of the hostile position. The squadron drew upon itself the artillery fire from the enemy's position, and had to fall back without being able to obtain any information in regard to the position of the enemy's infantry; but the officers' patrol crept through hollows and bushes close up to this same squadron, which did not notice it, and sent in the fullest information, not only concerning the squadron, but also with respect to the whole of the hostile position."

The reconnoissance of a road should comprise a map of the road itself, and would require a certain knowledge of map-making and the use of conventional signs generally employed, which should be acquired by all officers and non-commissioned officers. The line of the road should be represented, including the country for a short distance on each side; the character and slope of the hills; whether steep or not; location of bridges or fords, and a description of the water-courses, the kind of bottom and width and swiftness of the streams; the woods or defiles through which the road passes towns and villages; and the notes should state what accommodation or supplies can be found therein, their size, and of what material the buildings are generally constructed. It should be stated whether the country is undulating, hilly, or broken, where marshes occur, and farms and buildings should be shown. In order that any officer or non-commissioned officer should be able to make an intelligent report upon the roads or country that it may travel over, he should be able to read and understand maps and the use of the compass, and should have some instruction upon the usual manner of taking the notes required. The road should be sketched on the paper from the bottom toward the top, leaving a margin to place notes descriptive of the route. The direction of each turn of the road should be taken with the compass and shown on the paper, noting the reading of the compass also. The objects lying a short distance from the road are observed and represented about the time they are passed. The distances traveled on each stretch of the road or at any point is found by counting the horse's steps and ascertaining the measure of the step, or approximately, by knowing at what rate your horse will walk a mile, and then estimating the distance traveled by the time taken.

As the limits of this paper will not admit of dwelling further on the subject of hasty sketching and topographical work, those who are anxious or desirous of additional information on the matter are referred to an excellent book called "Reconnoissance and Scouting," by Captain R. S. Baden Powell, of the Thirteenth Hussars, British Army, published in London.

I would also recommend to you the following books for study:

Elements of the Art of War, Mercur, text book at West Point.

Elements of Modern Tactics, Shaw; London.

Minor Tactics, Clery; London.

Letters on Cavalry, Prince Kraft Zu Hohenlohe; London; translated by Colonel Walford.

Outpost Duty, Wm. Gordon; Chatham, England.

LECTURE NO. 6.

BY LIEUTENANT COLONEL PETER C. HAINS, U. S. ENGINEER CORPS.

Field fortifications; temporary entrenchments; sieges.

The subject on which I have consented to address you this evening is of such magnitude and importance that I hardly know how to begin or how to deal with it in the limited time at my disposal. There is, perhaps, no branch of instruction in the military service so neglected, notwithstanding its importance, as that pertaining to field fortifications, and this remark does not apply to the National Guard alone, but to the Army generally. The importance of a thorough system of instruction in this branch of the military service is recognized by all military authorities, and the want of it is almost invariably felt when a nation first becomes involved in war. It was so in 1861 and it will doubtless be so again when the occasion arises for putting large armies in the field. The war of the rebellion had gone on two or three years before the importance of constructing hasty fortifications was duly appreciated. Men were willing to fight, but were not willing to dig dirt. They got over that feeling before the war was over, and the best of soldiers were found fighting behind entrenchments.

In the campaign of the Army of the Potomac in 1864, from the Rapidan to the James, that army lost in one month a number equal to the force that confronted it in the beginning of the campaign, and this was largely due

to the fact that the Confederates were generally posted behind entrenchments, many of them of the most temporary kind.

When the war of the rebellion ended, the question as to whether the bayonet had not better be turned into a shovel was long discussed. It is not by any means settled yet to the satisfaction of all military men, but I have no hesitation in saying that I would prefer the weight of the bayonet to be put in an entrenching tool. Undoubtedly the bayonet is occasionally a useful weapon, but the shovel is often needed, and needed badly. There are a hundred occasions where a shovel can be used to advantage to one where a bayonet would be of any use at all. The importance of the shovel was recognized at an early period of the Turko-Russian war, and before it ended all the Russian infantry carried a shovel as well as a musket, and every regiment had its quota of entrenching tools. I might go on all the evening pointing out examples of embarrassd military operations and disastrous failures due to lack of the appreciation of the importance of fortifications, and also to grand victories brought about largely by the education of the line officers of all arms in a knowledge of its principles. Napoleon said: "There are five things from which the soldier must never be separated—his gun, his ammunition, his knapsack, his rations for four days, and an entrenching tool." The importance of the last named has vastly increased in modern times.

The wars of modern times are of short duration. Battles are fought in quick succession; but the numbers of killed in a pitched battle to-day, notwithstanding all the improvements in the implements of destruction, are smaller than formerly. Wars being of shorter duration, there is not time for proper instruction after they have begun. It is true there is no teacher like expe-

rience, but its lessons are learned at a fearful cost, and sometimes too late to be of value.

The object of fortifications is to strengthen a defensive position. If the attacking force is the stronger, which is generally the case, fortifications tend to remove the disparity, and may even give the preponderance to the defensive. The recent improvement in small arms has added so much to the power of the defense that it may be questioned now whether a well-defended line of entrenchments can be carried by assault. The experience gained in the war of 1861, in the Franco-Prussian war, and in the Turko-Russian war does not tend to encourage a careful commander to attempt an assault on well-defended entrenchments, unless there are some very favorable attending circumstances.

There are, properly speaking, only two kinds of fortifications, viz: permanent and temporary. The latter, however, may be considered as of two classes also—ordinary field fortifications and hasty fortifications. Permanent fortifications are those usually built in times of peace, occupy important strategical positions, and are built of durable materials and with great care. They are not strictly permanent, but are intended to last for a long time, and are called so for want of a better name.

Field fortifications are those generally built after the declaration of war. They are more hastily constructed and built of more perishable material, generally, with the aid of troops, and occupy points of temporary strategic importance. Hasty fortifications are those built in the time intervening between the end of a march and the beginning of a battle. They are built in a few hours, sometimes in a few minutes, and on the line of battle. Veteran troops, when they have learned the importance of this class of entrenchments, begin to fortify as soon as arms are stacked and skirmishers thrown out. They are

sometimes built during the progress of battle, and whenever a new position is taken.

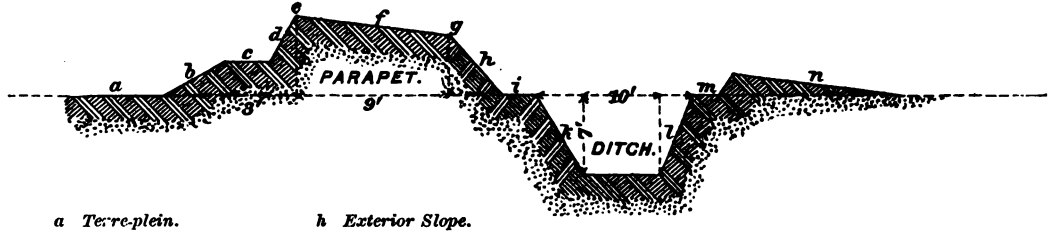
Fortifications, whatever be their nature, are a passive means of defense. A strictly passive defense will always be avoided by a skillful general, but with a proper system of fortifications they enable him to act on the defensive on one part of the line and on the offensive on another, taking advantage of the most favored plan of military operations—the offensive defensive. This was the plan adopted by the Army of Northern Virginia during the greater part of the war of the rebellion.

Fortifications should fulfill certain conditions. They should provide shelter from the enemy's missiles and screen the defenders from view. The positions should be so taken that the enemy may not approach within cannon range without being exposed to the fire of the defenders, and the approaches should be made as difficult as possible for the enemy, and at the same time interfere as little as possible with the movements of the defenders.

In an earthwork of any kind, there are two principal parts, the earthen cover and the excavation from which it is made. The former is called the parapet, the latter the ditch when it is in front of the parapet, and trench when it is behind it.

There are certain terms used in connection with fortifications with which every officer and soldier should be familiar. I will try to define some of those in most common use.

The term "intrenchments" is applied to works of considerable extent. A "fort" is a small work, generally having within it all the means of defense, and this term is used in contradistinction to the word "fortress," which signifies a single work of great extent, covering a city or town, or having within it a large number of



a Terre-plein.
b Banquette Slope.
c Banquette Tread.
d Interior Slope.
e Interior Crest.
f Superior Slope.
g Exterior Crest.
h Exterior Slope.
i Berm.
k Scarp.
l Counterscarp.
m Covered Way.
n Glacis.

PLATE XI.

buildings. Fort Monroe is sometimes called a fortress for this reason, and is the only fortress in the United States. When there are a number of works, either connected or not, they are classed as "lines."

The "terre-plein" is the surface on which the men stand in readiness to defend the parapet. In this position they are sheltered from the view of the enemy. In field fortifications the terre-plein is generally the natural surface of the ground. When the men take position to fire over the parapet, they step up on a raised earthen platform called the "banquette" or "banquette tread." It is generally from two to four feet wide, and is reached by steps or an earthen slope called the "banquette slope."

The "interior slope," or breast height wall, is that part against which the men lean in firing over the parapet. It has an inclination generally of about three vertical to one base, and is about four and a half feet high.

The "superior slope" is the top slope. It has an inclination generally of one vertical to six base.

The "exterior slope" is the outside one, the foot of which reaches the ditch. It has a slope of one upon one.

The intersection of the interior with the superior slope is called the "interior crest." It is the most important line used to represent a work on paper. It is the highest part of a fort, and when the outline of one is indicated by a single line (which is sometimes done when the drawing is on a small scale) it is represented by the line of the interior crest.

At the foot of the superior slope is what is called the "berme." It is from one to three feet wide, depending on the character of the soil on which the work is built, and is intended to provide for any caving in of the scarp that may take place from the effect of rains. It is re-

garded as better construction to dispense with a berme if it can be done, as it affords a resting place for men in an attack on the work.

The " scarp " is the side of the ditch next the parapet, and is sometimes constructed on a slope, and sometimes vertically.

The " counter-scarp " is the opposite side of the ditch, and may be constructed either vertically or with an inclination, depending on the character of the soil.

The superior slope being rather flat, a man standing on the banquette cannot see all the ground in front of the ditch. There is a space which cannot be reached by his fire. This is called a " dead space," and to get rid of it there is constructed in front of the ditch a mound of earth, having a slope in prolongation of that of the superior slope, called the " glacis." The space between the crest of the counter-scarp and the glacis is called the covered way. In permanent works or field-works of large size, which have a very high parapet, this covered way is utilized for defensive purposes, and plays a most important part in the defense.

When a parapet is defended by artillery the guns are mounted either on an elevated platform, generally made of earth, from which position they fire over the parapet, or through an opening in it called an " embrasure." The latter is about 18 inches wide at the neck, and opens outward. The sides are generally reveted with sand bags, hurdles, or gabions to protect from the blast of the gun. The bottom of the embrasure is called the " sole," and the widening toward the front the " splay." The fire of the gun in embrasure is, of course, somewhat restricted. When the gun is so mounted that it can fire over the parapet it is said to be " en barbette." The field of fire in this case is larger, but the exposure is greater.

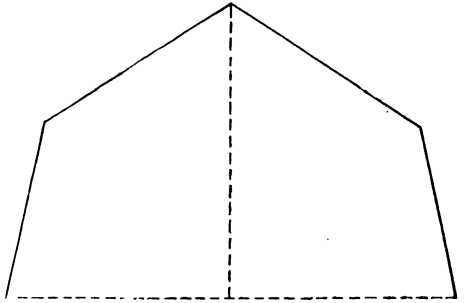
In laying out a field-work the artillery is generally

placed so that the guns will be in pairs, and between each pair a "traverse" is constructed. Traverses serve to cover from an enfilading fire, or to intercept the fragments of shells which burst close to the interior crest. In the former case they are of course made thicker than they need be in the latter, and in the latter case they are generally called "splinter-proof traverses" (Plate XII). When constructed for protection against an enfilading fire they are sometimes arranged for defense by infantry.

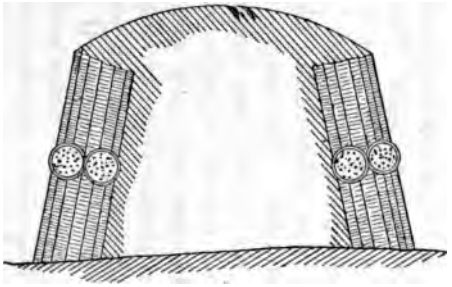
The height of the parapet is generally fixed at about eight feet, but it may be greater or less, depending upon the topography of the ground. If there be any positions commanding it which can be occupied by the enemy the parapet must be made higher. The thickness of the parapet is not usually less than nine feet, and it is increased when it is liable to be cannonaded by heavy guns. No definite rules can be laid down, but it may be assumed that at least three feet is needed to keep out a rifled bullet at close range, and nine feet if exposed to light field artillery.

In field fortifications the ditch is not usually regarded as a serious obstacle. The defense places its obstacles at some point beyond, but within convenient range, generally not less than 150 feet. Primarily the ditch is made for the purpose of furnishing material for the parapet, but it can be made a very useful adjunct in the defense, particularly if it be made wide and deep. The method of calculating the width and depth of a ditch in order to obtain the requisite amount of earth for a parapet need not be explained.

Field-works may be of limited extent and dependent upon the troops within them alone for defense; they are then classed as forts or field-works; or they may be a number of such works covering an army; they are then classed as lines. The works at Vicksburg, Rich-



Lunette.



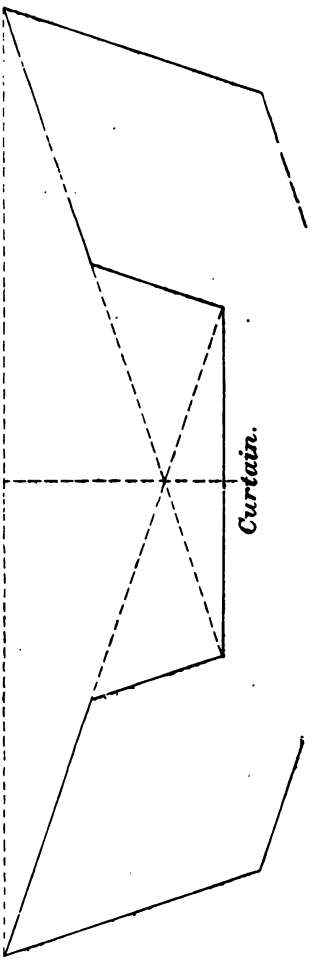
Splinter-proof Traverse.

PLATE XII.

mond, and those around Washington were classed as lines.

Different kinds of field-works receive different names according to their shape in plan. The "redan" is a three-sided work shaped like a letter A with the part above the cross-bar cut off. A "lunette" is a four-sided work open to the rear (Plate XII). Closed works are generally called redoubts. They may be square, polygonal, star-shaped, round, or of any irregular form.

A field-work that has all its angles salient—that is, projecting outward, does not cover with a direct fire all the ground in front. There are angular spaces in front of the salient angles which can only be reached by an oblique fire from the parapet. If the projecting angles are very obtuse, this is not a serious defect, but if they are as small as ninety degrees or less, it is a more serious matter. To overcome it, the work is made with salient and reëntrant angles. This may be done in a very simple manner, or by the construction of what is called the "bastioned front" (Plate XIII). The latter is formed by taking a straight line and from the middle point of it letting fall a perpendicular equal to about one-sixth the length of the former; draw a line from each extremity of the straight line through the end of the perpendicular. These will give the directions of the faces of the bastions. A convenient length is laid off on each, and from the points thus taken a perpendicular is let fall to the other; these become the flanks of the bastions; joining the extremities of them by a straight line called the curtain, the front is completed. The bastioned front gives good cross-fire in its front, and for a time was regarded as the most perfect system; indeed, it is so regarded still by many, but it has defects. It is much more difficult to construct, entails much more labor in construction, and is only suited to *comparatively level ground.*



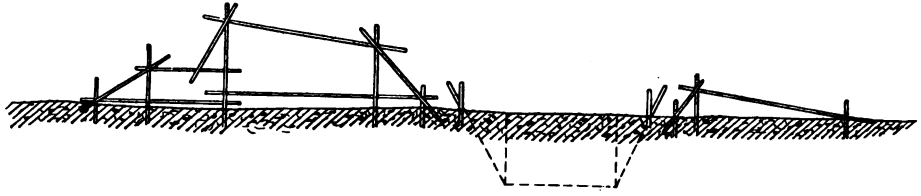
Bastioned Front.

Field-works are generally laid out by engineer troops, but the work of construction is done by the infantry or, if practicable, by hired labor. The outline of the interior crest is generally laid out with cords, and the shape of the parapet indicated by profiles, which are constructed by driving posts into the ground and nailing strips on them (Plate XIV).

An able-bodied man can dig about one cubic yard of soft earth per hour, throwing it not more than six feet high and twelve feet horizontally. An infantry soldier seldom accomplishes that much. Three yards a day is a fair day's work, for soldiers do not take to digging dirt with any great alacrity or enthusiasm, so far as my observation goes. Taking three yards per man as a basis, it is easy to calculate the number of men needed to do a certain work, and how to distribute them advantageously along the ditch. In all cases, when practicable, the earth should be rammed to solidify it.

The superior slope, being flat, will not be washed by rain to any injurious extent, neither will the superior slope if it be well rammed or sodded, but the interior slope, being steeper, will wash, unless protected in some way. The same may be said of the scarp and counterscarp, though it is of less importance in these cases. To protect the slopes, recourse is had to what are called "revetments." These may be made in various ways. The interior slopes, for instance, may be revetted with fascines, with gabions, hurdles, timbers, logs, barrels, sand-bags, or sod.

Fascines are made by taking small branches or brush and binding them in rolls about nine inches in diameter. They are secured in this way by means of wire or cord. When used for revetments they are laid one on top of another, and generally anchored to the interior of the parapet by wires and pegs.



Profiling.

PLATE XIV.

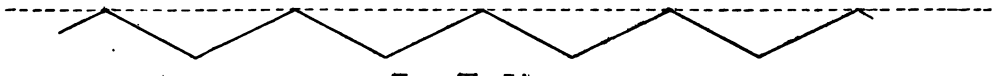
Gabions are sometimes used. They are made of rough basket-work in the form of a barrel, and are generally about eighteen inches in diameter and two and a half feet high. They are made by driving short posts into the ground in a circle and weaving small branches of green wood around and through them in the form of basket-work.

Hurdles are made by weaving small twigs or withes about short posts, one and a half inches in diameter, in the form of basket-work. The hurdles are generally made about two feet nine inches high and in lengths of six feet.

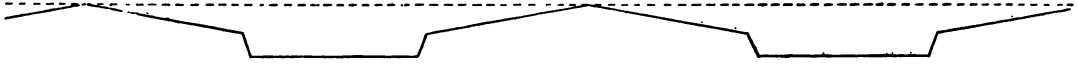
Boards or timber form good revetments; so do logs, flour barrels, cracker boxes, etc. In a sandy soil sandbags are used. They are well suited for the purpose in any kind of soil, as there are no splinters from them when struck by artillery. Sod makes a first-class revetment. It should be put in with the grass downward and held in place by small pegs.

Field-works, such as are constructed to cover an entrenched camp or an army in the field, are called "lines." They may be either continuous or with intervals, and they get names according to their shape. When the entire line has no intervals or openings in it, except those through which roads pass, they are called "continued lines." When the front to be defended is covered by a number of works scattered, but placed near enough to give mutual support, the arrangement is called "lines with intervals."

"Continued lines" may be either straight or indented—that is, having salient and reëntrant angles. They then take names according to the manner in which the indentations are made. The annexed figures show the "redan line," the "tenaille line," and the "bastioned line" (Plate XV).



Tenaille Line.



Bastioned Line.

Redan Line.

PLATE XV.

Straight lines are seldom used. The topography of the ground will not generally admit of it, but if it should it is not a good arrangement, as the front of a work to be well defended should be subjected to a cross-fire, which cannot be obtained from a straight line.

"Lines with intervals" are formed by the construction of field-works within supporting distance of each other, but not connected. The main obstacle to the passage of an enemy between them is the fire of the defense. The advantages of a continuous line are that it brings the whole command more under the direct control of the general commanding. In lines with intervals each isolated work becomes to a certain extent a detachment, not under the direct communication and control of the commanding officer. Unity of action of the whole command is thus impaired. Lines with intervals, however, have the great advantage that they afford good means for the movement of troops for offensive operations; they require fewer men to defend them, and they can be held in part sometimes when some of the works are lost. If they be well placed, and an active defense be made, a strong force would be required to take one or two works on the front line.

The *tete de pont*, or "bridge-head," is applied to a field-work intended to cover the crossing of a stream. A redan or lunette is generally constructed on the side toward the enemy, and if the bridge be a very important one, other works on the opposite side, commanding the former, are also constructed. These should be so placed as to flank the approaches on the side of the enemy. The bridge-head should be closed in the rear by a stockade, which could be destroyed by the fire of the defenders in case the bridge-head should fall into possession of the enemy. A stockade is a line of stout posts or logs set firmly in the ground, in contact with each

other, and sharpened at the top. They are loop-holed for musketry defense. About forty inches of timber is needed to keep out a shot from ordinary field artillery. A stockade is a good means of defense against infantry or cavalry. Another wooden construction of great use for the protection of bridges on long lines of communication is the block-house. It is nothing more or less than a log hut arranged for defensive purposes.

As before remarked, the ditch is not formed primarily as an obstacle, but rather for the purpose of furnishing material for forming the parapet. Nevertheless it can be made a serious obstacle, particularly if it is flanked by the fire of some adjacent work, and unless it is so flanked it may afford cover to the assailants. A case came under my observation at Vicksburg in the attack on the 22d of May, 1863. The ditch of one of the redoubts became filled with our men, and the only way they could be reached by the defenders was by lighting shells and rolling them over the parapet into the ditch, using them as hand-grenades. The ditch was not flanked by the fire of any other part of the line; consequently the men, for a time at least, were comparatively safe while in it. Sometimes sharp-pointed posts are planted in the scarp, pointing at an angle downward; this is called a "fraise." Another good obstacle, which is easily constructed and available under almost any circumstances, is called an abattis, which consists of heavy branches of trees pinned to the earth, the ends of the branches being sharpened. It is of course necessary to have this kind of obstacle under cover, so that the enemy's artillery cannot destroy it.

"Wire entanglements," which are sometimes used for the same purpose, are put up by making the wires fast to short posts bedded in the ground at intervals of about eight feet. This form of obstacle is quickly constructed

when the materials are at hand. *Chevaux de frise* consist of a heavy piece of timber through which holes are bored at right angles to each other, and then through these holes sticks are driven and sharpened at the ends. Sometimes they are shod with iron. The sticks are called lances and are about ten feet long. A "palisade" is nothing more or less than a strong fence, the pickets of which are bedded firmly in the ground, at intervals of about three inches, and sharpened at the top. They may be either inclined or vertical. "Military pits" are holes in the ground, conical in form, with a sharpened picket in the bottom. They may be either shallow or deep; in other words, they must be either too shallow or too deep to allow of their being used as a means of cover. "Slashings" are made by the felling of trees, cutting them so that they shall fall toward the side from which an attack is expected. The trees should not be cut entirely through, but only enough to make them fall. "Torpedoes" are sometimes used as obstacles, and may be made of ordinary artillery shells, with the fuses so arranged that a man stepping on them ignites them. They may also be fired by electricity. They are not generally made use of to any great extent in field operations, but they have become in recent years a very important factor in the defense of harbors. The "stone fougasse" is constructed by making a funnel-shaped hole in the ground, with the large opening toward the enemy. A charge of powder is placed in the smaller end and a covering of boards put over it. Stones are placed in front of the boards. The powder is fired at the right moment by electricity or a fuse. The result of the explosion is to scatter the stones in a shower over a considerabte extent of ground in front. Obstacles, whatever their nature, are a passive means of defense. They can be overcome unless they are brought within easy

range of the fire of the defenders. They should be so arranged as not to afford shelter to the enemy. They should, as far as practicable, be protected from the fire of the enemy's artillery. They should be so arranged as not to interfere with the active defense of the work.

HASTY INTRENCHMENTS.

Ordinary field-works, such as I have described, are generally constructed under the supervision of engineer officers and soldiers when they are available. There is another class of field fortifications which must be constructed by the troops themselves without waiting for any one, without even having the positions selected by engineer officers. These are known as "hasty intrenchments." No organization can maintain a close formation under the continuous fire of an enemy in force, well handled and armed with modern weapons, without cover of some sort. In your skirmish drill you are instructed to take advantage of anything that will give cover; but in this case you fight in open order, and each man acts to a considerable extent on his own individual responsibility. In a close formation it is not possible to take advantage of cover in the same way; yet the necessity for it at the present day is recognized, if troops are to be subjected to the fire of the enemy for any length of time.

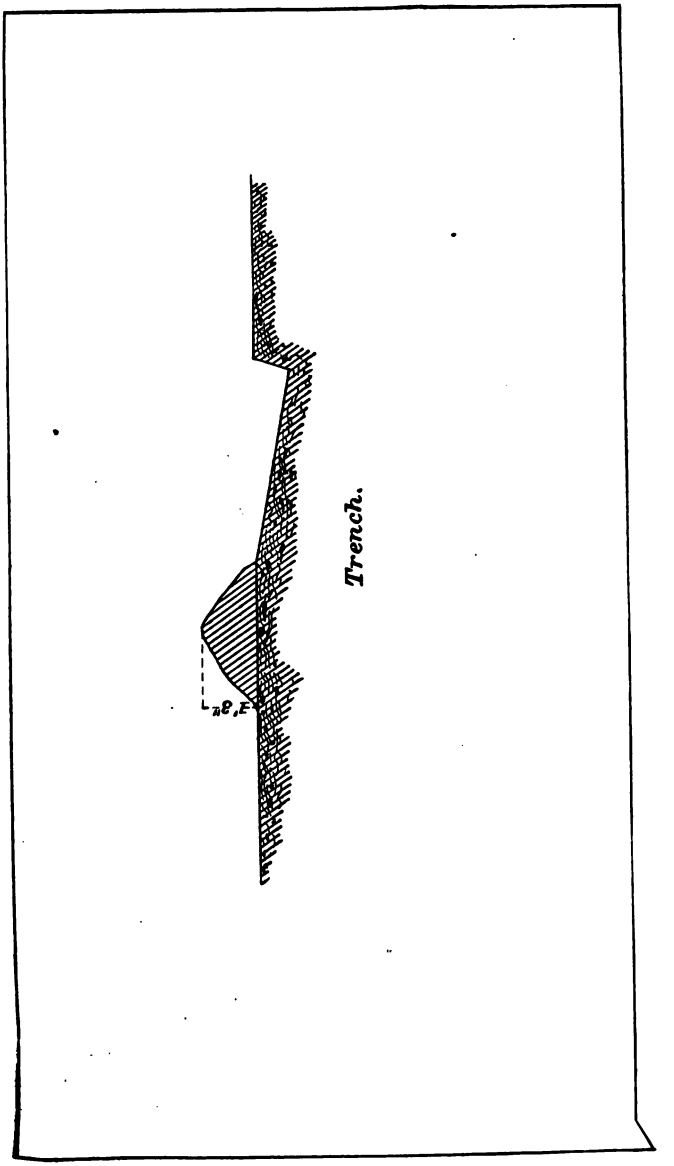
This kind of intrenchments was much used during the latter part of the war of the rebellion, after the men had learned their value by sad experience. An army operating in close proximity to another would begin the construction of such works as soon as the line of battle was formed, without waiting for orders. Tin pans and bayonets were frequently used as intrenching tools. An earthen mound fifteen inches high and twenty-four inches thick, in connection with a trench in the rear of

it, which would furnish the material for this mound, would screen men from view and give good protection from musketry (Plate XVI). Such trenches could be thrown up with proper tools in from fifteen to twenty minutes. Besides the cover which they give, they produce also a moral effect—the men behind them feel more secure, while the assailants are frequently unable to tell whether the work is of a light character or not. The effect of an earth-work appearing in front of an attacking force causes them to hesitate, and the lightest kind of works are frequently mistaken for something more formidable. These trenches can always be enlarged and rendered more formidable, if time permits, after they are occupied.

Hasty cover for artillery can be made in a similar way. The artillery generally being posted on commanding positions, a cut can be made on the brow of a hill eighteen inches to two feet deep, and the earth thrown up in front. From a distance such a work possesses almost as formidable an appearance as a well-constructed field-work. An instance came under my observation at the battle of Fort Gibson, May 1, 1863. The attacking force was under the command of Major General John A. McClernand, Thirteenth Army Corps. Some of the enemy's artillery was posted on the crest of a ridge, the face of which was so steep that grass did not grow on it. This gave it the appearance of an earth-work. Officers high in rank were much concerned about this battery, which they thought was posted in a strong fort. Hasty defenses include all kinds extemporized shelters, which are quickly constructed from the material at hand. A few logs rolled together, fence rails, anything that will hide the soldier from view, will be useful.

It frequently happens that the front of a defensive position is occupied by houses; these, if built of brick,

PLATE XVI.



can be quickly converted into defenses of some strength, if they be not under the fire of artillery. In order to do this, loop-holes are cut in the walls for musketry fire, and the space outside cleared of such obstructions as would give cover to an attacking force. All inflammable material as far as practicable should be removed. Water in barrels and buckets should be kept on hand to put out fire, should the building catch. The doors and windows should be barricaded, and earth thrown on the floors to make them less combustible.

Hedges can be converted into good defenses by throwing up dirt from a trench behind them. Stone fences are good against musketry, but if subjected to artillery fire are worse than nothing.

COMMUNICATIONS.

It is important that good means of communication should be provided within all defensive works. Traverses should not extend so far back as to impede the operations of the defense. A case came under my observation at Vicksburg on the 22d of May, 1863. An assault was made on the enemy's lines and our men reached the ditch of one of the Confederate redoubts. This redoubt had two long sides and a short one, something like a redan, only the long sides were rather close together. There were three traverses built in the work to cover from an enfilade fire of our artillery. These traverses extended from one face nearly across the redoubt to the other, and consequently divided it into three separate compartments. When our advance was made the men reached the ditch, and some of them got into the outer compartment. All except one sergeant were killed or fell back. The sergeant, a young fellow with great presence of mind, picked up a breech-loading rifle and pointing it at the head of the officer in com-

mand of the men forming the garrison of this compartment, made him and all his men, fourteen in number, lie down and surrender as prisoners of war. He then made them crawl out into the ditch and took them into our own lines. The ditch at the time was full of our men, and the enemy had discharged all their pieces, while the sergeant had his loaded. There were plenty of men in the adjoining compartment, but, owing to their inability to communicate with each other, they did not know what was going on, and hence gave no help.

SIEGE OPERATIONS.

It is hardly probable that troops called out under the circumstances set forth in the order of your general commanding would be called on for service in siege operations. These are of such a nature that they would hardly be undertaken by troops called into service for three months. Nevertheless it is desirable that some knowledge of such operations should be possessed by all officers of the military service. You might be called on for service in defensive operations, and a correct knowledge of these is only obtained by understanding what the probable operations of the enemy would be. Any war in which this country is apt to become involved would in all probability be a defensive one. We are not an aggressive people. Nevertheless wars are sometimes forced on a nation and cannot be avoided without dishonor. It is necessary, in order to maintain a peaceful attitude, that we should be able to resent an insult. While it is not probable that you would be called on to besiege any place on this continent, you might be called on to defend one. The Capital of the nation was once captured by the British, and, if history repeats itself, the same thing might be attempted again. An attack may be a sudden one or it may be prolonged.

The former is called an assault; the latter a siege. The assault may be an open one—that is, made suddenly and, if possible, unexpectedly, or it may be attempted secretly. In either case, if the defense is properly managed, it rarely succeeds. Resort is then had to siege operations. These consist in preparing the way for another assult, by removing all obstacles to the advance and getting cover for the troops close up to the defenders, so that the latter may, if practicable, be overwhelmed in a sudden rush by force of numbers.

The first operation in this is called an investment, and consists in the posting of troops in such positions as to cut off, if possible, all sources of supplies and communications. If the place defended be a town with a considerable population it will generally have to surrender within a short time if the investment be made complete, as the garrison will have to cut its way out or be reduced by starvation. If, however, the works be extensive, covering a large area, it is seldom possible to make an investment complete. In that case recourse is had to what is called a bombardment. The bombardment has for its object the destruction, as far as practicable, of the enemy's works, their magazines and important buildings, and the demoralization of the troops and inhabitants. If done in a vigorous manner, the evacuation or surrender may result after a short time. If not, the bombardment should have the effect of dismounting a large part of the artillery of the defense, tiring out the garrison, and preparing the way for further operations. An assault is sometimes tried immediately after the bombardment, but it is a delicate operation, calling forth the highest military talent on the part of a commander, and is only undertaken where the attacking force is largely superior to that attacked. A preponderance of five to one is not regarded as large for

the conduct of such operations, unless there be some favorable attending circumstances. If the assault fails, the advance is carried forward by regular approaches.

When such operations have been resolved upon, an accurate survey of the ground to be passed over is made, the point of attack selected, and all possible information gathered respecting the enemy's works. Siege material is accumulated, magazines established beyond the range of the enemy's artillery, and a line of defense formed by the attacking force. Such lines are called lines of contra-vallation. Batteries are established for reducing the fire of the besieged, and the regular approaches made by what are called zigzags. These zigzags are nothing more or less than sunken roadways covered from the fire of the defenders, built like ordinary trenches, only wider and deeper. The directions given to them are obliquely to the front, so that they cannot be enfiladed by the enemy's fire. At intervals these roads are connected together by other trenches, called parallels; these parallels being arranged for defense by infantry. As the zigzags are carried forward and the parallels established, breaching and enfilading batteries are established, the object being to demolish the defensive works and dismount the artillery. Whenever it is practicable, several zigzags are pushed forward simultaneously toward the point of attack; but in order to push forward these works successfully it is absolutely necessary to silence the fire of the enemy's artillery. In the construction of the parallels and zigzags advantage is taken as far as possible of irregularities in the surface of the ground.

The construction of these approaches during the early stages of the siege is done by the infantry under the supervision of engineer officers and soldiers. When the approaches are pushed forward into close proximity

of the points of attack, the work is done by sappers and miners. The simplest kind of trench-work is called the ordinary trench. It is about ten feet wide on the bottom and four feet deep, the earth from which is thrown up on the side toward the enemy to a height of about four and a half feet. This makes the bed of the roadway or bottom of the trench about eight and a half feet below the top of the mound of earth.

These trenches or approaches are called "saps." There is the "flying sap," which is constructed by placing a row of gabions along the line on which the sap is to be constructed and filling them with earth taken from the excavation. It is called a flying sap because it is quickly constructed. The full sap and double sap are constructed during the latter portion of the siege by engineer troops, called sappers, under the cover of a rolling shield called a "sap-roller." This sap-roller is constructed like a large gabion, and filled with fascines. It is generally made about four and a half feet in diameter and six feet long. Sometimes it is made partly hollow; when made solid and of green brush it is heavy and difficult to handle. As the heads of these approaches advance toward the ditch they are united at convenient distances by lines of trenches parallel to the front of attack and forming new parallels, the number of which can only be determined by the character of the ground and the obstinacy of the defense.

On level ground three parallels were regarded as sufficient in old times, but with the increased accuracy and effectiveness of modern arms this number is increased. At Fort Wagner, in Charleston harbor, there were seven parallels constructed, and at Sebastopol there were seven. At Vicksburg they varied from two to five, but the broken character of the ground in that case formed natural approaches.

After the approaches have reached the crest of the covered way, or within a short distance of it, in former times large mounds of earth were constructed which commanded the covered way and enabled the attacking force to drive out the defenders. These mounds were called trench cavaliers, and their construction was only practicable after the artillery fire of the enemy had been reduced. The occupation of the covered way is called "the crowning of the glacis."

The operations after that will depend somewhat upon the nature of the work and the obstinacy of the defense. They become very difficult if the ditch is wide and deep or if it be a wet one. After reaching the ditch, operations are continued sometimes by mining and sometimes by the construction of a sap through the covered way and across the ditch to a breach in the scarp wall, which must previously have been made by means of breaching batteries.

At an early period of the siege mortar batteries are established, the vertical fire from which is very demoralizing to the defense. This vertical fire has of late years become a more important factor than ever before, as a range of four to six miles is now attainable with rifled mortars.

At Vicksburg the navy had the only mortars used in the siege of that place. The army had none. As a substitute we made use of wooden mortars manufactured from gum logs bored out to six or twelve inches in diameter and banded with iron hoops. They were fired with small charges of powder.

Breaching batteries were formerly established close up to the works, but the great accuracy of aim that is now attainable with rifled guns enables them to be established at a point far to the rear of their former positions.

Sometimes, instead of making the descent into the ditch and attempting an assault on the breach, mining is resorted to. An assault made in connection with the explosion of a mine offers sometimes a favorable prospect of success. It failed lamentably at Petersburg, owing to bad management; and at Vicksburg, when a mine was exploded, no serious attempt was made to carry the works by assault, as it did not promise success. The garrison, though startled, was not dismayed.

When Vicksburg surrendered, the approaches had reached the ditch of the most important works, but whether the contemplated assault on the 4th of July would have been successful is a question. Fortunately it did not become necessary. The garrison and the people were in a starving condition, and could not have held out much longer under any circumstances. The garrison expected relief from Johnston's army, which was then located some distance to the northward and eastward. It was supposed that he would raise the siege by attacking us in the rear, but General Grant had provided for this contingency. A good army was organized facing to the eastward and a line of circumvallation formed—that is, a line of defense for our army to resist an attack from a relieving force. Johnston could not succor Pemberton without attacking us in our own lines.

The modern improvements in artillery and small arms have not changed the essential principles on which siege operations are conducted, though they have changed the details. The first parallel in old times was generally laid out at a distance of six hundred yards from the point of attack; nowadays it would be from three to five times as far.

Which has gained the most, the attack or the defense, by the modern improvements in the implements of war?

This is a question that has been much discussed in the last few years, and it has not by any means been answered to the satisfaction of military men. The question cannot be decided by the result of any particular battle or siege. There are so many conditions affecting the result in one case that have no bearing in another that it is not easy to draw inferences. The Franco-Prussian war in 1871 and the Turko-Russian war in 1874 afford the latest examples of actual warfare on a large scale; but even since these wars there have been improvements in the implements of destruction that affect one side or the other, advantageously or otherwise, to a degree unthought of at the present time.

Several inferences may be drawn from the records of these wars:

First. That the time required to reduce a well fortified place does not materially differ from what was in former times.

Second. That a siege can be carried to a successful termination at the present day with about as much certainty as it could formerly; in other words, the Germans and Russians were as successful in the sieges undertaken by them as were the combatants in the wars of the last two centuries.

Third. That hasty fortifications played a most important role in these two wars, and will in all probability do so to a greater extent in the future. The most perfectly defended places, so far as engineering skill could make them so, fell before the superior forces of the Germans in France with almost equal certainty as did those that were defended only by the most hastily constructed works. Belfort, a place fortified according to the most approved methods, fell after a siege of one hundred and three days, while Plevna, in Turkey, though at first fortified with only the most hastily constructed trenches,

nearly all of which were constructed during the siege held out one hundred and forty-three days. The garrison made an obstinate defense and the attacking force a determined attack in both cases.

Fourth. That the modern improvements give a certain advantage to the attacking force, in enabling the lines of investment to be carried to lengths that would have been deemed utterly impracticable in former times. This arises partly from the fact that a thin line armed with the modern magazine rifle can pour forth a storm of lead that no close formation of troops can withstand without cover. The attacking force can thus extend their lines, under cover of hasty intrenchments, to an indefinite extent, and so complete an investment that would otherwise have been impracticable. The defense is thus compelled to take the offensive or submit to reduction by starvation.

In conclusion, I have only to add that there is no doubt but that the National Guard of the District of Columbia are ready and willing to respond to the call of duty in defense of the country whenever called on. I trust that they will be as well prepared for service as they are ready and willing, but I hope the occasion to test your qualities beyond the hardships of a summer encampment at Fort Washington may not arise. If it should, my advice is, be not too proud to be a "digger of dirt." Keep a small entrenching tool with you at all times, and be not ashamed to use it.

LECTURE NO. 7.

BY FIRST LIEUTENANT CONSTANTINE CHASE, THIRD ARTILLERY, U. S. ARMY.

Attack and Defense.

According to the syllabus of this course of lectures, we are now in the presence of what has been called "the decisive act of war;" that is to say, we now approach the climax of all tactical operations and combinations—the combat.

Assuming that you have attended these lectures with certain preparation—that is, that you are at least masters of the drill book—it may be said that you have received by this time a fair instruction in the elements of soldiering, and that you have had a glimpse of the principles which it is indispensable to know in order to perform accurate and useful work as a military officer. Probably you have also become familiar with military organizations sufficiently for the purposes of this course of lectures, and to form some conception of that great and glorious agent of warfare, the army, of which you form a part.

You have been told of the rules by which the army is to be fed, moved, and camped; how information and security are to be obtained; also how natural positions are strengthened by artificial means, etc. These are some of the conventional grand divisions of military science, to which another should be added and described, the supreme object of which is the destruc-

tion of hostile troops by the combat or battle. To this division has been given the name of tactics, and under it belongs most properly the subject-matter of my remarks this evening. But before I proceed further I would impress it indelibly upon your minds that this use of the term tactics has no reference to mere drill, for we have long passed that and are now dealing with the practical application of the elementary principles that you are supposed to have learned at drill; wherefore you must not expect an account of the minute details of individual action, but an attempt rather to present a picture of the coöperation of the whole, of which the individual forms but an infinitesimal part.

Logically, the army being known to us, we ought at this point to study the properties of its elements—that is, the properties of infantry, cavalry, and artillery—and deduce the rules for their employment in action, because these form the basis of all tactical combinations, some of which we are now about to make use of. But time is lacking; therefore we must be content with a very brief summary in this direction. For the same reason I feel compelled to refrain from the discussion of fire-action and the application of the various kinds of fire of the several arms, which, indeed, is a special study, although a part of tactics.

Infantry, as I have heretofore said, is the principal arm. It is essentially an arm of execution. To it belongs the honor of carrying the assault of positions and of repulsing attacks. It is the arm for obtaining decisive results. It acts both by fire and shock, but largely by the first.

Artillery prepares the combat, sustains it, and coöperates in the pursuit—thanks to its destructive effect, which, when its practice is good, as it always must be to be of any utility, is far-reaching and terrible. Artillery

must possess the characteristics of accurate fire, coolness, and dogged obstinacy. Its action is by fire alone.

Cavalry is the arm of unexpected action. In consequence of its mobility it may render immense service to the other arms by scouting the battle field and anticipating new circumstances that may occur, such as the approach of reinforcements for the enemy or of forces waited for by friendly troops. It falls suddenly upon shattered infantry, repulses the attempts of hostile cavalry, and finally it makes the pursuit and protects the retreat. It also transmits information by relays. Strategically, cavalry performs the services of observation and security, and procures information which it delivers, *in time for use*, to the proper authority. It acts both by fire and shock.

Engineers prepare ground, remove obstacles, direct the other troops in building defensive works, and assist in the combat as infantry.

In conjunction with the combatants, the signal corps establishes correspondence by the field telegraph and other skillful means, and the hospital corps succors the wounded and establishes the field hospital and ambulance services. These last, with the supply services, which we need not mention here, are the non-combatants.

Such are the chief properties of the combatant arms and their most active associates in battle, but their military value depends upon the motive force and mechanical power of the former.

The motive force is the sentiment that animates them; it is that sense of duty whereby the "soldier who, subjected to the most deadly fire, remains under the control of his leaders, always ready to move forward without thinking of recoiling. * * * In the combat it is he who will use his means of destruction to the best ad-

vantage; and, when such material means are in even balance between the combatants, it is he who will triumph; for in a hostile engagement, indeed, the moral forces of the two adversaries come into competition."

The mechanical power lies in the organization of the troops, their education and skill, and their mode of combat, in which last the influence of their armament constitutes the largest factor. How useless and criminal it is, then, to dream of doing battle with raw, uninstructed troops, and to imagine that the warlike strength of a people resides in numbers alone.

The chief commander must be able to dispose, according to his will and the projects that he has in view, of all these elements, cause them to coöperate in the success of the conceptions that he has reached, and it must be accepted as a law that there is true tactical action only when the three arms are combined.

Having these ideas of the elements of action, we ought next to recognize the meaning and effect of the "offensive" and "defensive" attack and defense, and the difference between "battle" and "combat," as well as form some idea of the value of "positions" and their occupation.

The combat is a struggle between the smaller tactical units of an army—such, for example, as a division—while the term battle is applied to a struggle between armies, or important fractions of an army, such as an army corps.

The battle leads to a strategic result that increases in importance according to the proportion of their total forces that both sides have engaged in it. The combat generally has a purely tactical result, and it is possible to become engaged in a partial or local combat during a battle; hence we see that the term combat is properly applicable to the action of a battalion, regiment, brigade,

division, and sometimes of the corps; and that, when compared to the battle, the combat is the smaller action.

Manifestly, it is necessary that one of the parties must be the aggressor in order to have a struggle; hence the other resists and finds himself on the defensive. The "defensive" is, therefore, the act of sustaining the struggle by resisting the efforts of the aggressor. Its principal characteristic is momentary stability.

The "offensive" is the act of commencing the struggle by taking the initiative in order to attack the adversary. Its principle characteristic is movement.

But the two situations are not unchangeable and cannot be; for a vigorous offensive, that may have dislodged the adversary from a position, may in its turn be compelled to take the defensive, if the enemy is still sufficiently strong to attempt to retake it. Moreover, the defensive that sees the attack fail must, in order to obtain a decisive success, choose the favorable moment to assume the offensive and move upon its adversary.

We therefore see that in both cases there is a transformation of the primitive attitude, which is tantamount to saying that an aggressor *may* be obliged to defend himself, and that the defender is *always* obliged to attack if he would obtain decisive results.

There are cases, it is true, where a passive defense is imposed, but we need not discuss them now. What I wish to emphasize is that, aside from such circumstances, and they are rare, *the defensive should never be other than momentary.* I am aware that the roles of assailant and defender are not always left to the choice of the commanders of troops in a fighting situation. These often arise from a state of things created by strategy; but, the combat being commenced in a defensive attitude, I insist that the moment is to be watched for passing to the offensive as soon as possible.

I may add, in leaving this point, that the offensive derives its principal power from moral effect, while the defensive must count especially upon material superiority, which is not always available in a campaign and is difficult to maintain.

A "position" is that part of the battle-field upon which an army establishes itself according to its "order of battle," as it is called. It occupies an extent of ground called the *front*, which is subdivided arbitrarily into *center* and *wings*. The position also presents *flanks*; and the *rear* is the space behind the front.

In principle, the defense draws its chief advantage from the position it occupies, the choice of which is therefore of prime importance. It must be examined with reference to its front, the ground before its front, the approaches, its interior, and the ground in rear and on the flanks. If the natural configuration of the ground does not afford proper protection to the men and assure their fire, the time at disposal must be turned to profit by throwing up temporary works on the points of support.

The main requirements of a good position are: An extent proportioned to the available force for defending it; water supply; flanks well secured; a very open field of fire; a few points of support on the front, and even in the interior, together with a condition of things that will admit of the defenders passing easily to the offensive.

These points are not always to be found combined in one locality, but when secured, the defense, which is especially based on fire, need not fear to fire at extreme long ranges with deliberation; but every care must be taken to watch the movements of the adversary in order to discover, if possible, his intention, because the attack knows best what it would do, and can play its part with greater decision. It will not fail, for instance, to attempt

the invasion of one or even both the flanks while it distracts the front; consequently ample reserve must be held disposable and convenient.

Fixed rules cannot be laid down for the disposition of troops defending a position, because so much depends upon the ground as well as the force that is available. It may, however, be said, on good authority, that "in ordinary country, including all arms and reserves, five men per running yard are sufficient." For the purely passive defense of a position, three men per yard may do under certain conditions. For an active defense, from five to twelve men per yard will be required. Their disposition would be something like the following:

1. *The Outpost Line.*—Strength, from about one-sixth to one-fifth of the whole force, posted about two miles from the main position. The duties and details of this line have already been admirably told you by Colonel Carpenter in a previous lecture.

2. *The Main Line*, consisting of (*a*) advance posts, (*b*) the first line of defense, (*c*) the second line of defense.

The advance posts are within about a thousand yards of the first line that might form points of support for the attack. They would be held by troops drawn from the second line.

The first line of defense, comprising villages, hills, woods, or earth-works, would be held by about half the whole force, after deducting the general reserve. The points themselves, which are supporting points, are to be held passively, so as to yield as many men as possible for the defense of the intervals.

The second line of defense, which is from 100 to 800 yards in rear of the first line, ought to be hidden from the enemy, and so situated that the troops composing it may be moved in any direction to the front or flanks. Their function is to reinforce the first line and assist

in the counter-attack when made. Any unemployed cavalry is posted with this line or with the general reserve.

The artillery is placed about 500 yards in rear of the first line, or on that line if the other is not practicable.

3. *The Third Line or General Reserve.*—About one-half the force is at the disposal of the chief commander. It is usually in rear of the center or in echelon behind the flanks.

In addition to this there should always be a *rallying line* about one to three miles in rear of the position, to protect the retreat—a contingency always to be provided for, although it is not to be talked about, especially to the men.

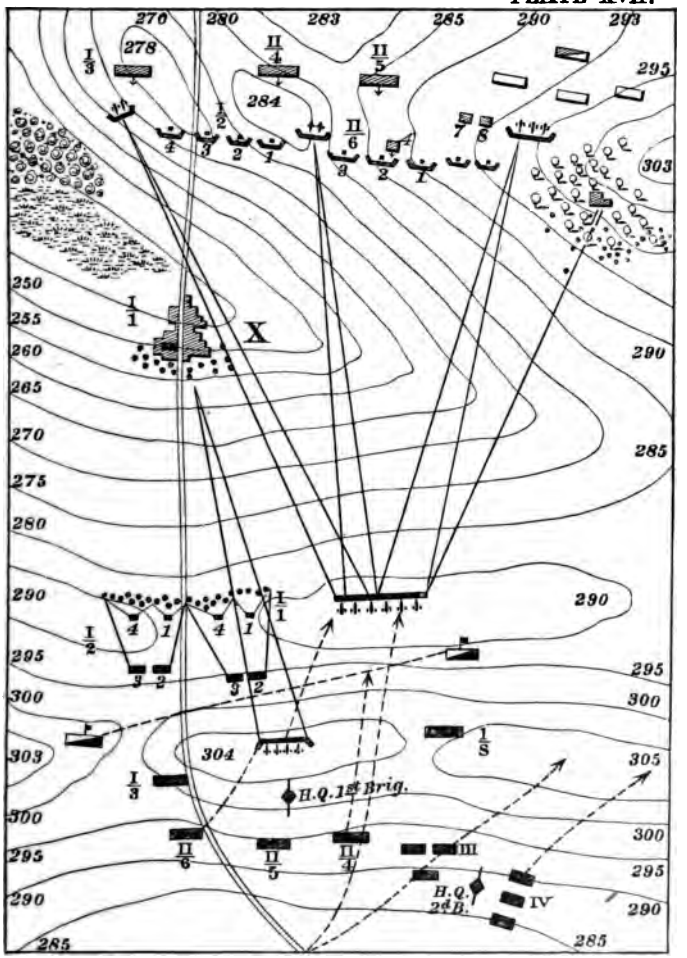
Let us now see, in as nearly practical a manner as possible, how a defensive position would be occupied by a small force of all arms. For this purpose we may assume the position shown on the upper part of Plate XVII, which position is about a mile and a half in extent and intended to dispute the passage of the road running north through the village of X.

I will assume that your own brigade has been posted where it occupies the right and forms part of a larger force, say a division.

There are the two infantry regiments; the First Regiment on the right with its First Battalion occupying the village of X, which, being an advance post of considerable importance with reference to the road and the right flank of the position, must be held. The Second Battalion is deployed behind the intrenchments. The Third Battalion is in reserve.

The Second Regiment has the Sixth Battalion deployed behind the intrenchments, three companies in line, with the fourth company forming its battalion reserve. The Fourth and Fifth Battalions are in the sec-

PLATE XVII.


270
280
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303
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290
X
H.Q.1st Brig.
304
H.Q. 2d B.
III
IV

ond line. To the left are the two company (Seventh and Eighth) Separate Battalions, one company of each deployed and one in support.

Between the First and Second Regiments, and somewhat retired, is Battery A, while to the right of the village of X is the cavalry troop, whose duty it is to scout the country on that flank and to the front down the road.

The Third, Fourth, and Fifth Battalions are the general reserve, and their duty is—

1st. To reinforce any of the vital points, which in this case may be the village of X, or the line of intrenchments now occupied by the Third, Sixth, Seventh, and Eighth Battalions, which is the center, or the mansion and wood on the left of the position.

2d. To make a counter-attack.

3d. To meet flank attacks, as on the mansion and wood.

4th. To protect a general retreat.

The key to the position is the hill (303) behind the mansion, which is held by other troops of our division not necessary to specify. The right flank of the position proper is strengthened and protected by the bog northwest of the village of X, and at the latter point the First Battalion deploys three companies outside the village and across the road, holding the other company as a battalion reserve in the village.

The occupation of this village is enforced, because otherwise it would surely be occupied by the assailant, wherein he would find favorable cover to reform and prepare a dangerous attack upon our main position. Besides from it the defender may cause much annoyance to the assailant's advance.

These dispositions naturally lead to a discussion of the utility of the occupation of advance posts along the

front of a position—a much controverted question among tacticians—and also to the consideration of particular cases of combat, such as the attack and defense of woods, defiles, villages, etc.; but it seems useless to attempt the former here, and it would take many words and much more time than is at our disposal to tell you properly of all the duties connected with the latter. These are special subjects and their importance demands special treatment and practical study on the ground; hence, although the subject-matter is embraced by the program for this lecture, I shall take the privilege of passing it with brief mention.

Villages, woods, etc., occurring on the line of a position are always more or less prominent tactical points and are often the scenes of the most desperate and sanguinary encounters. They may form points of resistance for defense, or they may mask and protect the assailant, who is then at liberty to approach and combine his movements in fair concealment. This I have already pointed out in the case in hand.

But there are some five kinds of villages, localities, or woods likely to be met in connection with a position, viz:

1. A village on a flank.
2. A village at or about the center of a position.
3. A village in front, within artillery range of other portions of a position.
4. A village in front, beyond artillery range but still too near to be disregarded.
5. A village behind a position, or on a line of retreat within range of it, and it is impossible to say here which is most important.

We may generalize by dividing villages into two classes:

1. Villages to be held in connection with a position.
2. Isolated villages.

Their defense is really a branch of field fortifications, the difference between the defense of the two classes being that the isolated village is prepared for defense all around, while the former is only prepared along the front and perhaps the exposed flank.

By preparation for defense I mean the construction of intrenchments, and these are governed by the extent the locality commands of or is commanded by the surrounding country, the nature of the obstacles in its immediate vicinity, the nature and construction of the houses, streets, etc., the time available, and the number and kind of troops for the garrison.

Villages held in connection with a position are usually so important that if taken by the enemy their recapture will probably be necessary; in which case a rallying position or work, manned by a reserve, will be required.

Isolated villages are in the nature of detached forts, and are often held at the exit or entrance of defiles, bridges, fords, etc.

Woods are much like villages in tactical importance, but they are always to be defended from their outer edges.

A wood must always be carefully reconnoitered and such points as the following noted before the project of defense is decided upon, viz., its breadth, depth, shape, and clearings; roads, paths, streams, ravines, and their direction; cover outside; flank defense afforded from other parts of the position; also support.

Two men per yard, including reserves, are laid down as a rule for defending a wood.

A defile is defined as a passage that can be traversed by force on a front that is tactically restricted in proportion to its strength. Defiles are dangerous obstacles to an advancing force, especially when near an enemy; *but, defensively*, they often enable an inferior force to

bar the way to a much stronger one. They are classed as long or short, with flanks as accessible or inaccessible.

A long defile with inaccessible flanks and scientifically defended, if it cannot be turned or surprised, may be regarded as an impassable obstacle. Such would be a mountain gorge, a cañon, a long causeway.

A short defile, with open though inaccessible flanks, and with the actual passage covered by the defender's fire, will rarely justify an open assault. Such are bridges, fords, certain streets in towns or cities.

A cañon or mountain defile is defended from the flanks, if the latter are accessible, otherwise in rear, except when the retreat of troops through the defile must be covered, in which case it is defended in rear and held in front by barricades or other works.

A bridge is defended in rear, except when the retreat of troops across it must be covered, in which case it is held also in front by a work called a bridge head or "tête-de-pont." If cover is available on both sides of the river, the position in front would be held as long as possible and that in rear afterwards defended.

Defiles with accessible flanks are defended from the flanks at the entrance.

Sunken roads, railway cuttings, and city streets constitute defiles of a minor kind, but they have been the scenes of desperate struggles. The city streets are of deep interest to you, and their attack and defense demand your closest study and attention. I am sorry I have not the time to more than mention the subject here.

Street-fighting is best studied under two heads: First, "fighting to obtain complete possession of a city or town into which you have forced your way, but where the defenders are still prepared to resist;' second, "the suppression of insurrection in a city which you hold with a garrison, but where the population is hostile."

This last is most important to you, and I can only say, in passing, that in such a situation such positions in the city must be occupied as will give you the power of isolating the insurgent quarter. This done, then endeavor to divide the quarter into sections, isolating these. Barricades or positions should not be attacked with main strength, but the houses or posts in their rear or on their flanks should be seized and the enemy forced to become the assailant. Cutting off the supply of provision and water will have a pacifying effect on many insurgents; but the one thing to remember is, *never to trifle with a mob.* If you touch them, touch them hard and relentlessly, else you are better at home.

I cannot urge upon you too strongly the study of these particular cases of fighting.

Returning now to the subject of the attack and defense of a position, I wish, before leaving it, to epitomize the duties of the defense by quoting a recent English writer.

"The object of the defense," he writes, "is to exhaust the assailants. This is done by providing cover for everybody in supplementing whatever cover exists by intrenchments and hasty field redoubts. From this cover the defenders keep up a continuous fire from the moment they have an adequate mark to aim at. Ammunition should never be wasted by firing at an inadequate mark, and the expenditure ought to be controlled by the group commanders; but considerable latitude should be given, as the object of the defenders is not simply to prevent the assailant from reaching within point-blank range of the position, but to diminish their forces at a distance, when their return fire can only be at random and comparatively harmless."

This is the fire action of the defense in a few words, and we may now proceed, as it is important to us to consider some of the more active features of the modern *mode of combat.*

For this purpose I shall assume your own organization—that is, the battalion of four companies—as the tactical unit of infantry, but with a company of three platoons instead of two. Three of these battalions form a regiment, and I regret that the limits of this paper do not permit me to discuss the various causes that have led to the methods that I may now only indicate.

To connect with the previous lecture of Colonel Carpenter, I shall assume the case of one battalion of infantry and one troop of cavalry on outposts against two companies of infantry and four troops of cavalry.

As a tactical idea, we are essentially on the defensive. The duty of the chain of sentries described by Colonel Carpenter is only to keep a sharp lookout and to give information. The first resistance will be offered by the pickets, which, in case of attack, form a line of skirmishers with small supports, while the picket supports back up the advanced line and take an active part in the combat.

The main body of the outposts will, by occupying a favorable position for defense, or, if a good opportunity offers, by advancing against one of the enemy's flanks, endeavor to force him back, or, at any rate, to hold him in check long enough for the troops in rear to get under arms.

The reconnoitering pickets must take care, above all, to communicate as soon as possible.

The composition of the enemy's force is such that no extensive use can be made by us of skirmishers as long as his cavalry remains intact, or unless the nature of the ground impedes its action.

Our battalion covers the camp of the brigade.

We have pushed forward the first and fourth companies, each furnishing two pickets and a support (figure 1); only as many double sentries are thrown out as are absolutely necessary. Eight hundred yards in advance

of the chain of sentries are some small cavalry patrols—two troopers with each picket, the rest of the cavalry remains with the main body of the outposts—that is, the second and third companies.

For convenience, we will now proceed by periods.

First Period (*Figure 1*).

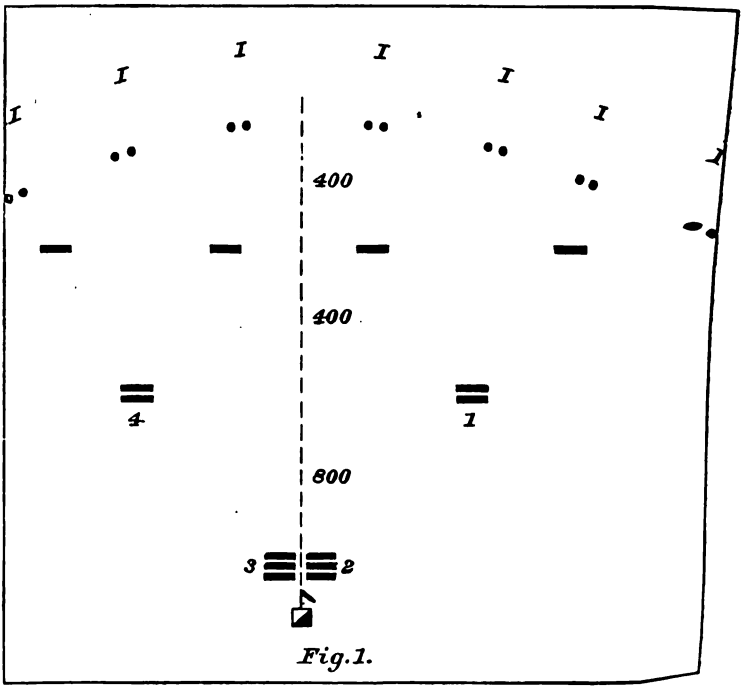

Fig. 1.

Some of the enemy's scouts show themselves, followed by detachments of both cavalry and infantry in close order. The enemy's strength cannot be determined.

Signal: Attention!

Our cavalry patrols retire slowly on the chain of sentries.

SECOND PERIOD (*Figure 2*).

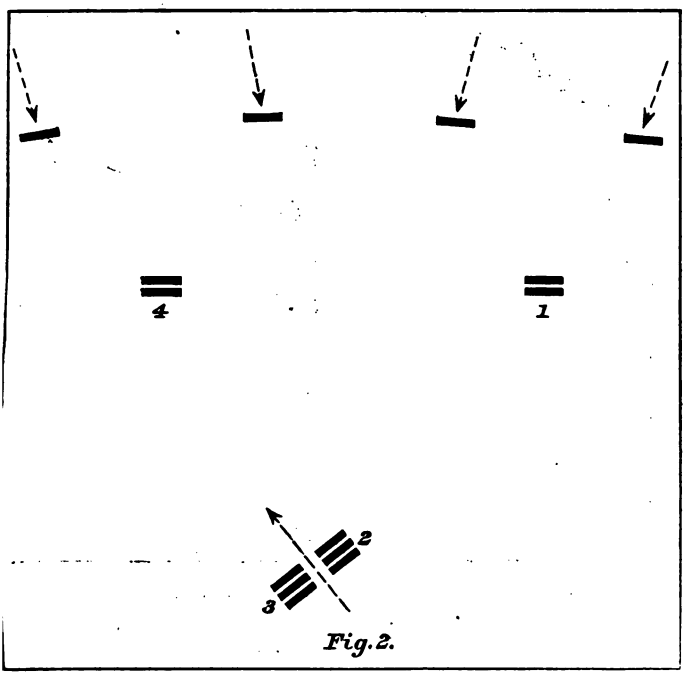

Fig. 2.

The enemy shows, up to this time, but four troops of cavalry and about a company of infantry, which move against the left flank of our outposts.

Our cavalry patrols and the chain of sentries retire on the pickets.

Our second and third companies advance toward the left flank of the front line.

THIRD PERIOD (*Figure 3*).

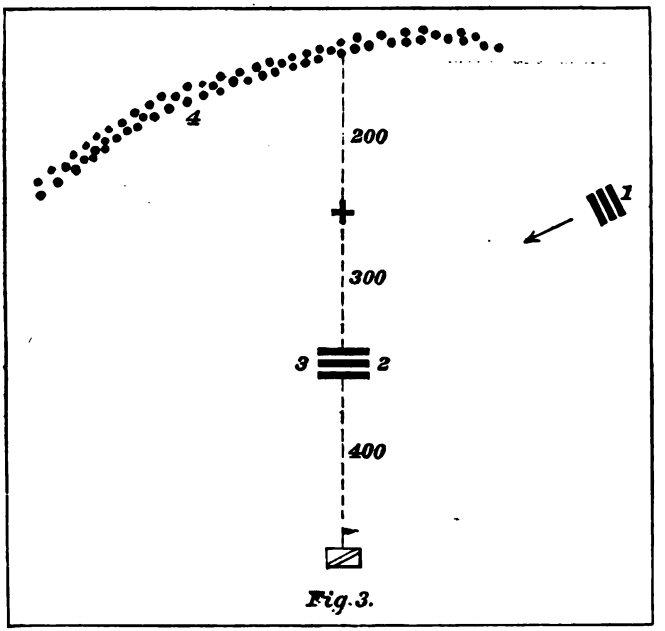

Fig. 3.

The enemy shows a second company of infantry on the left flank of our outposts. His infantry opens fire, and the cavalry takes post on the left flank of the infantry.

Dispositions:

Our fourth company extends a platoon to the front and another to the left flank. They commence firing.

Our first company moves toward the fourth company. The detachments pushed forward as outposts are, at the same time, drawn in.

Our second and third companies continue to advance and take post 300 yards in rear of the fourth company.

Our cavalry assembles 400 yards in rear of the second and third companies.

FOURTH PERIOD (*Figure 4*).

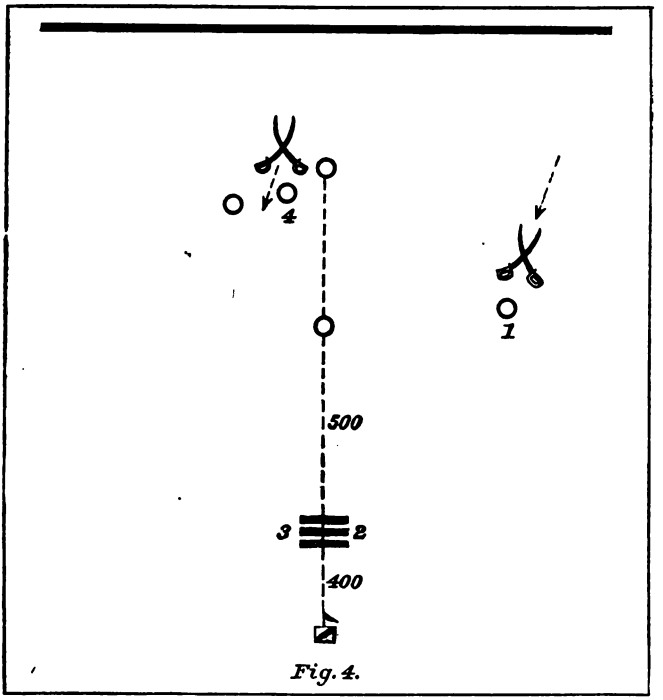

Fig. 4.

The enemy attacks the right wing of our skirmishers with one troop of cavalry in extended order and attacks our first company with three troops of cavalry.

Signal: First and fourth companies prepare for cavalry.

The cavalry charges the front of our first and fourth companies.

FIFTH PERIOD (*Figure 5*).

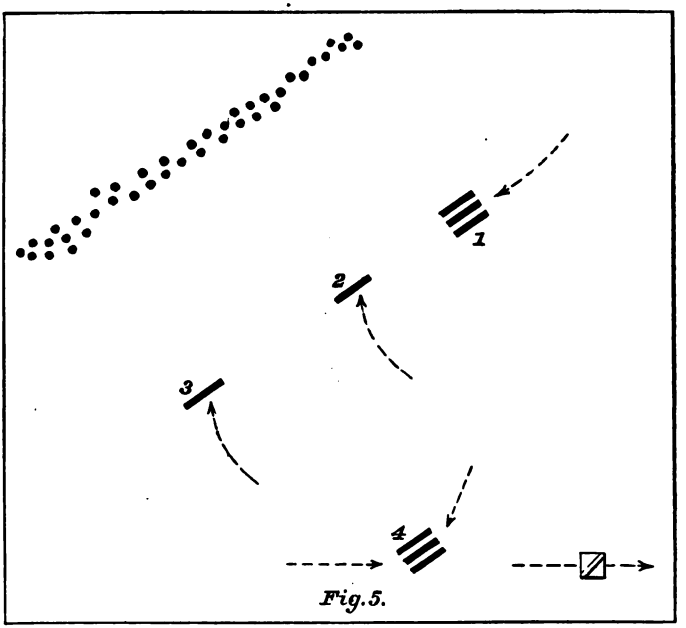

Fig. 5.

The enemy's cavalry retires during the attack. His infantry has drawn near to our left flank and its overwhelming fire forces our fourth company to retire.

Dispositions:

Our fourth company retires slowly, and assembles at 400 yards behind the relief.

Our second and third companies change front half left, each company extending two platoons. Relieve the fourth company.

Our first company doubles to a point 200 yards in rear of the right wing of the skirmishers.

Our cavalry posts itself 600 yards in the rear of the infantry.

SIXTH PERIOD (*Figure 6*).

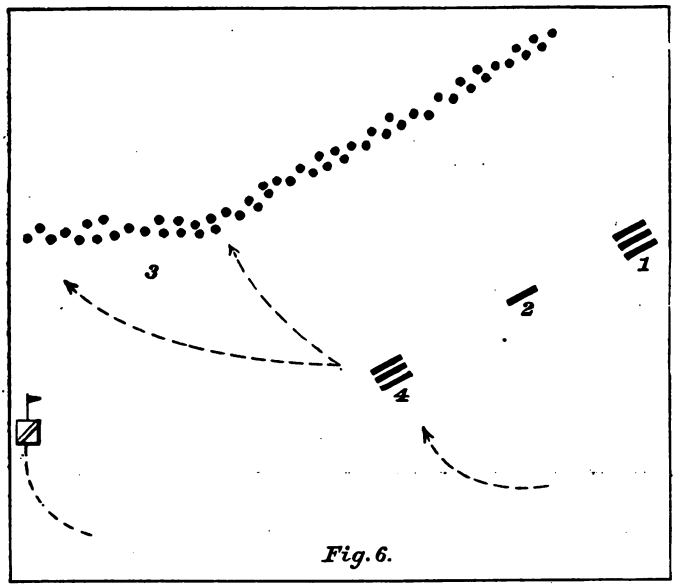

Fig. 6.

The enemy's infantry is checked by the fire of the skirmishers of our second and third companies.

His cavalry has taken up a position threatening the right flank of our infantry and prepares for a fresh attack.

Dispositions:

Our commandant determines to take the offensive with the left wing, which is not threatened with cavalry.

Our third company completes its extension and throws forward its left offensively.

Our fourth company takes the place of the third company.

Our cavalry places itself 300 yards on the left rear of the skirmish line.

SEVENTH PERIOD (*Figure 7*).

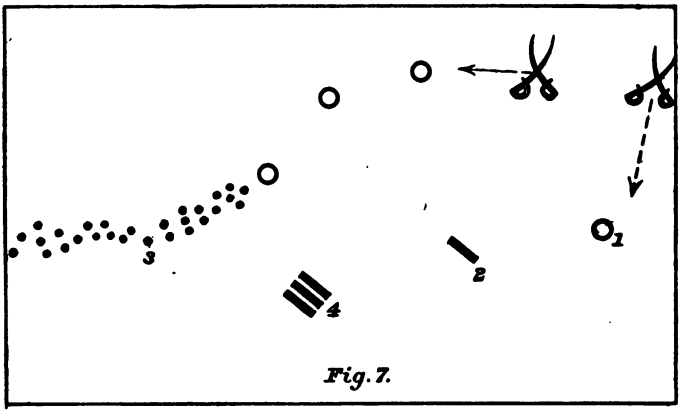

Fig. 7.

The enemy's infantry begins to give way slowly; his cavalry charges so as to disengage the infantry.

Signal: First and second companies prepare for cavalry.

The cavalry attack is directed against the left flank of our skirmishers and against the first company. The skirmishers of our left wing remain extended.

EIGHTH PERIOD.

The enemy's cavalry is repulsed with loss.

Signal: Extend. Advance all.

NINTH PERIOD (*Figure 8*).

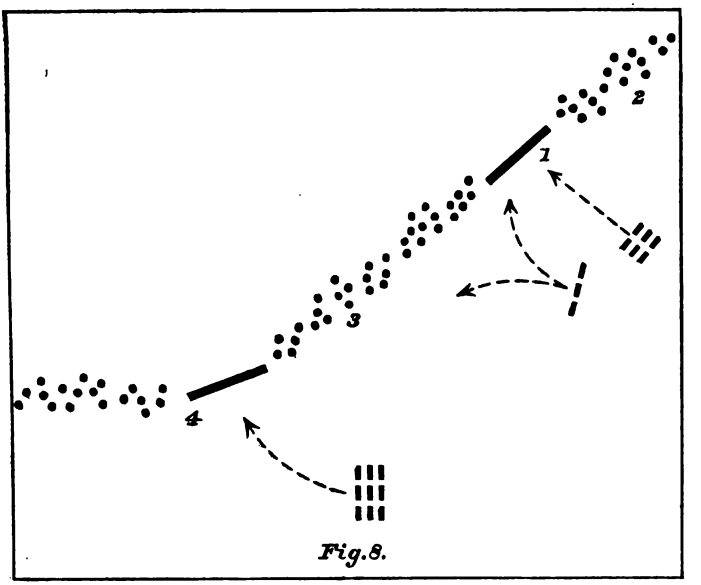

Fig. 8.

The enemy's infantry again holds its ground and keeps up a heavy fire; their cavalry rallies further back.

Signal: Halt all.

Dispositions:

Our second company completes its extension.

Our fourth company moves up into the left wing of the skirmishing line and fires volleys.

Our first company moves up into the right wing of the skirmishing line and fires volleys.

Signal: Double, March.

Our first and fourth companies rush forward with one platoon extended in front.

Our cavalry passes by the left of the fourth company and attacks in extended order.

TENTH PERIOD (*Figure 9*).

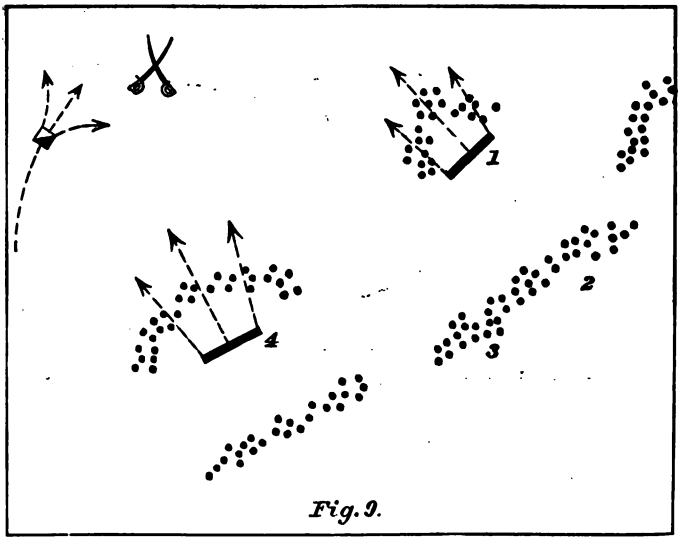

Fig. 9.

The enemy's infantry begin to retire slowly.

Signal: Double, March.

ELEVENTH PERIOD (*Figure 10*).

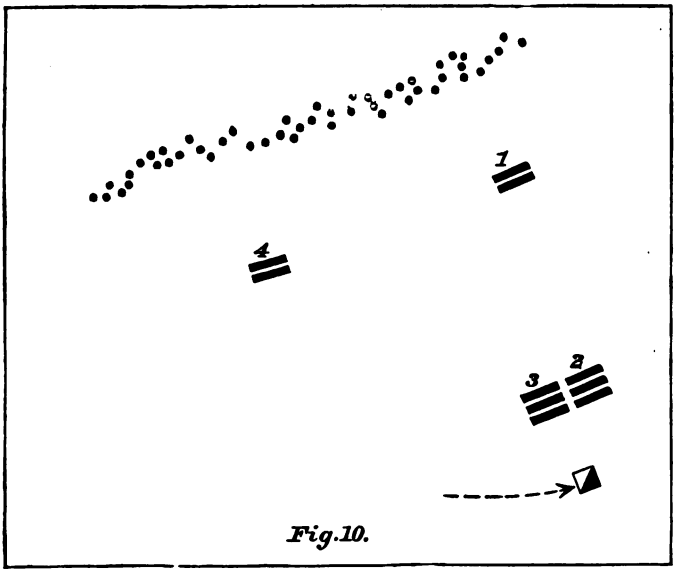

Fig. 10.

The enemy's infantry does not wait for the attack but retires in haste. Meanwhile two troops of the enemy's cavalry have taken post on each flank of the retreating infantry and thus stops the pursuit.

Signal: Halt all.

Dispositions:

Our second and third companies close to company column.

Our cavalry assembles near the third company.

TWELFTH PERIOD.

The enemy continues the retreat.

Dispositions:

Our cavalry observes the enemy, following him up with patrols.

Our second and third companies form the outposts in the position occupied by the first and fourth companies before the fight.

Our first and fourth companies form the main body of the outposts.

In the foregoing I have attempted to draw a picture of a combat of outposts, based on the idea, so admirably expressed by Colonel Carpenter, of making practical application on the ground of the principles you may learn in the lecture-room. What I have given is merely a tactical example drawn from various sources of study, and is purely theoretical, and not prescriptive. It is quite in your power to draw up others, provided you have the slightest appreciation of tactical science, and so vary the monotony of the "one, two, three" of the armory or barrack-yard by their application to the ground.

From this point I ought properly to discuss the modern method of attack and defense by battalion. It would be well also to analyze the principles upon which such employment of the battalion is based, for upon them is founded the employment in battle of the grand units. I regret that time limits me to a description of the combat of grand units without discussing the principles involved.

At the outset of this lecture I almost made the declaration that I have little heart in teaching the defensive attitude, but loyalty to the program has enforced my doing so up to this point. Having fulfilled that requirement, I will now consider the offensive, and, if you will follow me, I venture to say that, after what you have heard, your own acuteness will suggest much of the duty of the defense by comparison.

Our theater of operations will be the same as shown on Plate XVII, on which I before posted your brigade

defensively. It will therefore need no additional description.

Our force will be a division of two brigades, embracing eight troops of cavalry, four three-battalion regiments, two separate battalions of infantry, four batteries of field artillery, one company of engineers, ammunition and baggage train, provost guard, etc. The division is acting independently, and this force is assumed because it is the smallest unit that properly embraces the several arms.

The order of march is as follows—instructions on this point having already been given you by Colonel Long:

1. Cavalry of Security.
Seven troops.
3 to 5 miles.

2. Advance Guard.
One-half platoon of cavalry.
500 yards.
First company of First Battalion of infantry.
250 yards.
Second, third, and fourth companies of First Battalion of infantry.
One-half company of engineers.
500 yards.

3. Staff of First Brigade.
One-half platoon of cavalry.
Second Battalion of infantry.
Two batteries.
100 yards.
Third Battalion of infantry.
Infantry ammunition section.
One-half company of engineers.
Artillery caissons.
One section of ambulance column.
1 to 3 miles.

4. Main Body of The Division.
Division Staff.
One-half platoon of cavalry.
Fourth Battalion of infantry.
Two batteries.
Fifth and Sixth Battalions of infantry.
Seventh and Eighth Battalions of infantry.
Infantry ammunition section.
40 yards.

5. Staff of Second Brigade.
Third Regiment of infantry.
Fourth Regiment of infantry.
100 yards.

6. Train (battle).
Six infantry caissons.
Artillery caissons.
One ambulance column.
Detachment of provost guard.
500 yards.

7. Rear Guard.
One company of last battalion of infantry.
500 yards.
One-half platoon of cavalry.
2 miles.

8. Baggage Train, etc.
Provost guard and prisoners.
Ten to 15 miles from rear guard would follow the convoys, etc.

The division, in march in a general north-and-south direction, time evening, on arriving at a halting place, has received advice from the "cavalry of security" of the presence of the enemy, who appeared to be desirous of occupying a defensive position four or five miles in advance of the point reached by the cavalry.

The intelligence is quite vague. The cavalry has found, from the resistance and from attempting to com-

plete its information, that it has been unable to pierce the adversary's screen of exploration.

From the strategic situation there is room for taking a vigorous offensive. The General resolves to so act, and directs the colonel commanding the cavalry regiment to unmask the advance guard on the following day and protect the deployment of its artillery when it goes into battery.

We are able only to give the general physiognomy of the operations in quite a hypothetical manner.

The General gives orders for the march on the following day, making known the general situation according to the above intelligence.

In anticipation of a combat, he may modify the general disposition given above. For example, the two echelons of the batteries may march together. This was what was done in Germany in 1870, where they call it the "accelerated formation."

The separate battalion may also be made to march at the head of the main body, in view of its intervention at the commencement of the engagement. The second regiment in this case would march united.

The baggage train and convoy receives orders for a favorable destination and instructions. The battle train receives subsequent orders.

If the route permits it, a march formation on a more extended front may be adopted, so as to bring the elements of the column nearer the head and permit their more rapid intervention.

In the night the cavalry commander obtains new intelligence. The enemy appears to be putting into a state of defense a position which cuts the north-and-south direction followed by the division a little obliquely—from northwest to southeast. According to indications, the front extends more to the southeast of the road and

has an approximate extent of 1,000 or 2,000 yards, which admits of believing that the enemy has not the numerical superiority. The position is on a secondary crest. In the valley in front is the village of X, about 700 or 800 yards before the front across the road, and which seems to be an advance post. A mansion surrounded by a park or wood, and beside it a redoubt, is perceived on the slopes toward the east. It is therefore probably the left point of support. A wood extends along the foot of the slopes to the westward of the road, but on this side the ground is marshy and almost impracticable.

Such, in substance, is the report of the cavalry commander.

Other intelligence obtained by the staff officers of the division, by examination and interrogation of prisoners and deserters, the examination of papers and journals seized at the post offices by the cavalry, corroborates the report of the cavalry commander. It is thus learned that the enemy in front has a division, less two battalions and one battery.

The General commanding the first brigade, who should march at the head of the advance guard regiment, is advised of the information gained. The division commander causes him to come for, or gives him at the same time, instructions as to his mission, which will show better when the engagement is developed. He is to take a position so as to cannonade the village of X, which serves as an advance post, then to attack it and drive out the defenders.

It goes without saying that in the case under consideration the advance guard may be given such composition as the division commander may judge to be suitable. Here it is more especially an offensive reconnoissance.

The division is put in march, preceded by the advance guard. The infantry caissons have distributed car-

tridges and are en route back to the battle train to refill, but by a parallel road, so as not to encumber that on which the troops march.

After two or three hours marching the head of the advance guard halts (9 o'clock a. m.) at the place where the curve 285 cuts the road. (See plate XVII.) The main body of the advance guard closes upon it. A few shells have ploughed the road that has been followed. The cavalry falls back and forms in a fold of the ground to the left of the advance guard, which moves off the road.

The General of brigade examines the state of affairs rapidly. The advance post does not permit the artillery to take position at good distance for struggling with that of the defense, and it is quite necessary to cannonade the village of X first, and then attack for the purpose of driving out its defenders.

Consequently the two batteries take position about 2,000 or 1,500 yards from the village and open a shell fire in order to prepare for the attack of the infantry on the advance guard. The infantry advances in line of company columns, then deploys in order to proceed with the attack upon the advance post.

The cavalry holds itself in rear of the left, ready to protect the batteries.

The Second Regiment and the separate battalion have been sent by the division commander towards the place of combat in order to support the advance guard and the artillery.

In the case represented, the artillery of the advance guard is put in battery at a minimum distance. It is necessary to take it up to the edge of the knoll so as to give it full action and open the ground in front. This knoll has been previously staked off and found to be about 2,400 yards from the batteries of the defense.

Hence it is necessary to hasten and make the rest of the divisional artillery advance in order to overwhelm the batteries of the defense.

As soon as the attack has been prepared by the fire of the artillery the First Regiment deploys its first two battalions and pushes back the three companies that occupy the advance post. As the latter is completely under fire and it is not possible to hold out there before gaining the upper hand in the artillery struggle, it is sufficient to prevent the defender from occupying the outskirts and annoying the batteries of the attack.

While the cannonade by the batteries of the advance guard is going on, the division commander has gone upon the knoll 304 to judge of the state of affairs. The position has an extent of about 1,600 to 1,800 yards. The right flank is protected by a marshy valley unfavorable for the action of cavalry. The position cannot be enveloped on this side. The defender's left appears to be the strong part, for he has occupied the mansion in front of his left and massed troops in rear of this wing. The flank is protected, besides, by a redoubt armed with cannon, whence he may act to a great distance and oblige the assailant to make any enveloping movement broader.

The General, in spite of the reënforcement on the left of the defender, decides to attack at this point. The ground on the other side of the road presents steep slopes, and besides, quite a marshy part, rendering access very difficult. His chief of staff and artillery, engineer and cavalry commanders have accompanied him on the reconnoissance. He tells them each their part of his resolution and gives them instructions.

The artillery commander causes the remaining batteries of the divisional artillery to advance at once. In many cases these batteries will have taken the foreground as soon as the General may have joined the ad-*vance guard.*

The project of the General being to engage the first brigade in front and envelop the left flank of the adversary by the second brigade, he has ordered the commander of the advance guard to engage a second combat and to develop front toward the east as soon as his second regiment shall arrive.

The commander of the second brigade and the chiefs of the administration services receive orders from the division commander, who, besides the instructions already given on the spot to the commanders of the first brigade, the artillery, cavalry, and engineers, makes known:

1st. The information as to the enemy's position and the general plan of attack.

2d. Instructions as to the particular mission of each brigade.

3d. Orders for non-brigaded troops who may receive a special mission or to be assigned to one of the brigades. In the hypothetical case examined these troops, that is, the separate battalion, have made a forced march so as to gain the rear of the right of the divisional batteries at the moment when the last elements of the main body clear the road.

4th. The emplacements to be given the administration services of the first and second lines, ambulances, and ammunition columns. These are most generally given by the staff service.

5th. The General makes known the place where he will be during the combat for receiving reports and giving orders.

6th. He instructs, confidentially, the chiefs of brigade of artillery and cavalry as to the direction of a possible retreat.

7th. The General adds such other directions as particular circumstances may indicate, such as carrying certain points of support, eccentric movements, etc.

As soon as the generals of the brigades are informed, they give their colonels more detailed orders relative to the mission of the regiments, but they do not enter into the details of execution. The colonels give the majors orders for the execution of those given by the General: the mission of each of the battalions, general direction of the march, the zone of combat that is assigned to it, etc. The majors conform to the principles of the tactics of the battalion for the execution of their orders.

Pending the struggle of the artillery with that of the defense, the troops of the main body take an assembly formation. It is important that these troops shall not enter the zone of fire of the arms of the defender until the deployment of the masses is accomplished.

The artillery would generally be in a single group between the two brigades, though it should seek favorable positions for its fire, and it is not the practice to assign it to any fixed place. It fires over the infantry troops, or intervals are left free in front of the pieces, according to the shape of the ground. It only moves to make rushes forward of 500 yards or less.

In the example on the Plate the two batteries of the advance guard are taken from the knoll 304 to the knoll 290, about 500 yards off. They have been replaced there by the two batteries of the main body.

The second artillery position is only 1,600 yards from the batteries of the defense, but it is no longer necessary, with the present guns, to approach so near in order to engage in the artillery duel. Two thousand to 2,500 yards is sufficient.

Consequently one would be able to deploy the two batteries of the main body to the right of the batteries of the advance guard on the knoll 304; but the batteries must make a lateral movement: 1st, to have action upon the defender's right; 2d, to occupy a central po-

sition between the two brigades; hence it is rational to take them forward. It is certain that the defense will have exactly staked out the knoll 290, and will be ready to concentrate his fire upon that point as soon as the pieces shall show themselves there. If, therefore, one has the foresight to previously seek out the distance and "fire adjustment," operating from a position in the rear, then calculating the ground passed over, fire may be opened immediately.

That which is important in every case is to accomplish putting the whole group into battery in the least time possible.

It is under the protection of this intense fire that the Second Brigade quits the assembly formation, each regiment taking the desired direction for fulfilling its mission. Generally the second regiment of the brigade would serve as a general reserve. The first regiment would execute the enveloping movement.

As soon as the hostile infantry presents itself for its fire, the artillery opens on it. A few pieces only continue the fire upon those of the defense which may then be in action.

The artillery makes a new movement when its infantry has advanced 500 or 600 yards.

As soon as the Second Brigade begins to enter upon the scene the artillery concentrates its fire upon the point of attack. Here it will fire upon the redoubt and upon the mansion, which form the points of support of the defender's left.

When the fire must cease in order not to hit the assailing troops, which occurs when the latter are at about 300 yards from the position, the artillery changes its sights, elongates its fire, and tries to reach the reserves in rear.

The cavalry, which at the opening of the engagement

by the advance guard protected the batteries by taking position on their exterior flank, has detached the patrols necessary for the complete surveillance of the battle-field. As soon as the infantry of the advanced guard has obtained the advantage over the advance post of the enemy it passes to the right, not having a favorable ground at the left for its subsequent action, concealing its movement if it can. It watches opportunities for falling upon the troops of the defense and accompanies the brigade that is charged with the decisive attack, in order to dash in at the pursuit as soon as success may be indicated.

Supposing the attack to have reached to within about 1,000 yards from the defense, the tactical disposition of the troops will be theoretically as follows:

The First Brigade has engaged its Second Battalion in the struggle for seizing the village. The Third Battalion of the First Regiment is formed at the left, deploying but one company.

The Second Regiment has moved to the right of the first and has deployed two battalions in first line. This is called the normal formation.

The separate battalion is to the right of the batteries. It must carry the redoubt and the mansion in concert with the two battalions of the Third Regiment. The troops are supported by the Third Battalion of this last regiment.

The Fourth Regiment forms the general reserve. It will complete the envelopment and decide the action.

The defense extends its front on this side in order to meet the enveloping attack.

The infantry of the attack roots itself on all points of the ground that it seizes. It localizes the combat there during the time necessary to bring back cohesion in the attack.

The engineers follow the attacking troops in order to rapidly organize the conquered points, and, if there is need, they will precede the assaulting troops, so as to complete the destruction of obstacles that the artillery may not have accomplished sufficiently.

Let us suppose that the attack is victorious.

The defender makes a vigorous counter-attack on the Third Regiment, but has been repulsed, and the cavalry, intervening at a fortunate moment, has thrown this counter-attack back in disorder into the mansion park.

The defender has not, therefore, succeeded in disengaging his left. The First Battalion of the Second Regiment and the First Battalion of the Third Regiment, which are not indispensable on the front where the defenders, well established in shelter trenches, sustain the struggle with advantage, are directed toward the mansion to constitute a new reserve.

The division commander, seeing that the struggle nears its end, gives the order to the First Brigade to engage sharply and take the front by assault at the moment the Second Brigade shall carry the mansion and the redoubt.

Thus we pass to the general attack, which shall be executed simultaneously by the troops of both brigades.

The artillery gallops to reach the crest rapidly and throw its projectiles upon the defenders in retreat.

The cavalry passes to the left of the defender and harasses his disunited troops. It may throw itself upon the road, and thus be in shape to drive the defenders back in retreat.

The infantry of the second line, which has made the assault, crosses the position in the direction of its depth and gains the outskirts so as to fire.

The battalions of first line rally and quickly organize on the conquered ground.

We will remark in closing that the attack here presented might have been made by another combination than the enveloping attack of the enemy's left flank. A central attack vigorously pushed might produce good results, but the combined frontal and flank attack has been adopted as a sort of tactical dogma, and I have wished to show how the arms united proceed with it.

LECTURE NO. 8.

BY BRIGADIER GENERAL ALBERT ORDWAY, DISTRICT OF COLUMBIA MILITIA.

Preparation of muster-out rolls and discharge of troops; review of preceding lectures.

The course of lectures of which this is the conclusion was devised for the purpose of instructing you in the duties of field service, and it was conceived that they might be made more practical and attractive than the ordinary text-books on such subjects by assuming that the National Guard had been called into the service of the United States for ninety days on account of threatened war or invasion, and following you through what might occur to you during such service. Under this hypothesis you have now reached the end of the term for which you were called into service.

Possibly the cause for which you were called into service has been satisfactorily adjusted without bloodshed, and possibly the promptitude with which you occupied strategic points necessary for the defense of the country may have had a decided influence in bringing about such an adjustment. In such case you would return to your homes and to your usual avocations with a consciousness that you had rendered your country great service in a moment of peril, and with results that would have been utterly impossible if your previous training and experience in the National Guard had not made you sufficiently good soldiers to be taken into account in adjusting diplomatic difficulties.

Possibly war may become an actual fact during your term of service, the raising of a large army begun, and all the necessary preparations entered into for carrying on war. In such case, doubtless a very large number of you would be willing and eager to enter the army being raised for the defense of the country. At this moment more than any other will you appreciate, and the Government benefit by, the instruction you have received in the National Guard and the experience gained in your ninety days' service in the field. Tens of thousands of young men are rushing forward to volunteer, but, however patriotic and enthusiastic they may be, they are worse than useless until thoroughly organized and carefully trained. The few officers of our gallant little Regular Army, during the period of preparation, must be absorbed in the work of organization and administration, for which they alone are qualified; the volunteers and the Government must look to you for teachers and drill instructors. Your battalions may be raised into regiments; your regiments into brigades; your brigades into divisions, in which you will all find your appropriate places; or the volunteers may be enrolled into wholly new organizations, which will demand your services and in which you will be accorded such rank and position as you may have proven yourself competent to fill, while the National Guard returns to its place in the community with skeleton organizations, in which stay-at-home citizens will enroll themselves and be trained for any emergency that may require their temporary services during the progress of the impending war.

Whatever has occurred or may be expected to occur, the term of your service as National Guardsmen has expired, and you are entitled to be mustered out and honorably discharged from service. When this time

has arrived you will have had so much instruction and experience in making out rolls and returns that it is scarcely necessary in this lecture for me to give you detailed instructions relative to the muster-out roll; and, if you have profited by previous instruction and advice, you will have preserved such careful memoranda relative to your command that the making up of your muster-out roll will be comparatively easy. In addition to the muster-out roll, you must also prepare a separate discharge paper for each man. The muster-out, like the muster-in, is done by companies, and your muster-out roll must contain not only the names of the men remaining on the rolls of the company to be discharged, but also the name of every man who has belonged to the company at any time during its term of service. Against the name of each officer and soldier must be stated every incident of his personal service, such as details on special duty, appointments, reductions, sickness, wounds, injuries, confinement, punishment—in other words, as stated on the muster-out roll, all information necessary to "insure justice to the soldier and to the United States." The roll will also state the services of the company, actions in which it has been engaged, scouts, marches, changes of stations, and everything else of interest, with date and place of the occurrences noted. In short, the muster-out roll becomes the official history of your company and of every individual who has belonged to it during its term of service. Upon the thoroughness and care with which you have kept your personal and company records during your term of service will depend the value of this muster-out roll. The results that have followed our civil war should make an indelible impression on you, and long before this should have awakened our military authorities to the necessity of insisting that the proper making

and care of returns and reports should be made a more important feature of instruction in the National Guard. The rolls and returns of the vast volunteer army of 1861 to 1865 are so incomplete that the services of an army of clerks has been required for twenty-five years to put them into proper shape; and to-day tens of thousands of scoundrelly bounty-jumbers, conscripts, hospital bummers, and chronic guard-house prisoners are subsisting on the lavish bounty of an improvident Government, given under the guise of pensions; while tens of thousands of gallant soldiers, maimed by wounds or enfeebled by disease, struggle hopelessly against poverty, because their captains failed to keep and render proper returns that would preserve a record of every man. Let no such charge be laid at your door, if you should ever be called into service.

Under the plan of this course of lectures it was contemplated that I should review the several lectures to impress upon you the salient lessons taught in them. The lectures have been so thorough, and the educated and experienced officers of the army who have so generously volunteered their services for your benefit have so completely fulfilled their self-imposed tasks, that it leaves but little for me to add or suggest.

The principal difficulty in acquiring knowledge of the military profession is the prevailing impression that it is a mysterious science, based upon theories and governed by artificial rules that can only be learned and retained by intense application of memory. To the novice the movements prescribed in the drill book appear a labyrinth of evolutions of no more meaning than the intricate maneuvers of an Amazonian march in a comic opera; and the petty details of regulations an arbitrary code of ridiculous rules devised for the purpose of worrying and entrapping busy officers. So long

as you remain under this impression your studies will be laborious and fruitless. But when you realize that many principles and precepts of the science of war are almost as immutable as the facts of the exact sciences, and when you discover that the slightest movement or change of position prescribed in the drill book, or the most insignificant rule laid down in the regulations, is based upon some reason, you will find the study of your profession both a pleasure and an easy task. Begin by asking yourself "why," at the conclusion of every sentence of your drill book and regulations. You will soon find an answer to the question, and the mere effort of the mind in solving the question will leave the precept forever fixed in your memory or easy to recall. So with the study of these lectures, you will be able to find a reason for every lesson taught in them. Follow out this method of study and the result will be that if during your career as an officer you are confronted by an emergency or by a problem for which you can find no precedent, you will not only solve it, but will be able to give to your superiors, to whom you are accountable, your reasons for so solving it.

The first lecture of the course covered the period of your receiving the orders for service, the preparations for the duty ordered, your embarkation for the point to which ordered, and your disembarkation at that point.

This period is the most important in your whole tour of duty. The intense popular excitement that must exist under the causes that have led to your being called out, the enthusiasm and confusion that will naturally arise during the brief period of preparation, the hasty arrangements for leaving business and family to be cared for during absence—all will tend to loosen the bonds of military discipline for the moment. You are to pass in an instant from the condition of volunteer militia,

who, from pleasure, inclination, or duty, have been "playing soldier" without pay or responsibility, to the condition of actual soldiers; upon whom possibly may rest the safety of the country. The captain who has been loyally obeyed and respected as captain during the few brief hours of periodic drills and parades, and in the intervals has been the companion and friend "Jack," becomes on the instant *the* captain during all the waking and sleeping hours of time; charged with the care, the welfare, and possibly the fate of those under his command. It is during this brief period of preparation that officers will gain that absolute confidence and respect of their men that will insure the discipline and efficiency of their command during the entire period of service; or, on the other hand, create such feelings of distrust and suspicion that their command will be worthless and inefficient. It is during this brief period that the men of intelligence in the ranks will quickly recognize the transition and adapt themselves to it, realizing that their comfort, safety, and possibly their lives may depend on the discipline to which they must now submit, and which they should do all in their power to promote. It is to this supreme moment that all your previous instruction should have been directed, and you will now benefit by it to the extent you have heeded it. If you have always looked carefully after the equipment of your company and the condition of its arms, you will know instantly what you need and how to get it. You will know what men to detail for cooks and for company clerk, or where to find and enlist them at once. You will know just what your men ought to carry. You will assume your newly acquired authority over your men, not dictatorially nor arbitrarily, but firmly and judiciously; advising some, reasoning with some, encouraging some, and sternly repressing others, accord-

ing to your knowledge of their respective characters; so that by the time you are ready to start you will have your whole company inspired with such respect for your authority and such confidence in your judgment that they will cheerfully obey every requirement that you may impose upon them.

During the time that elapses between the receipt of orders and the time of departure thousands of men will volunteer to fill your ranks to the maximum. The course to be followed in reference to accepting recruits will probably be indicated in general orders; but it is safe to assert that under no circumstances should such orders permit any recruit to be received except those who have served one full term of service in the National Guard or are known to be experienced soldiers. Not only would the original command of thoroughly organized and drilled troops be more effective than if trebled in numbers by raw, though enthusiastic, recruits, but the whole command might be rendered inefficient and worthless for active service by such addition.

Invalid officers and non-commissioned officers might be left at home to receive and instruct recruits and forward them to the command as rapidly as instructed.

The most critical and trying time for the discipline of the whole command is the time of embarkation and the few hours following it. It is at this moment that all officers must hold the reins of authority and discipline with the most inflexible grasp, for it is at this moment that the few unruly and dissipated men of your command will test the strength of those reins and your grasp of them to the utmost; and even men who are usually intelligent, sober, good citizens and soldiers may be so overwhelmed by the supplies given them by injudicious friends, unthinking relatives, and enthusiastic citizens, as to need restraint and care. On the manner

in which you conduct yourself and care for your men during this critical period will depend your future usefulness as an officer.

I can only add that the whole matter of being called into service, preparing for service, and embarking for the point of destination should be the one problem of all others that every officer of the National Guard should constantly have in mind and should carefully think out and solve for himself exactly what he would do at the time. When the time comes it will come suddenly, *without warning;* there will be no time for study and but little time for instruction, and every officer should then be prepared to put into execution at once what he may have previously arranged in his own mind what he should and would do in the emergency.

The second and third lectures of the course covered the time that you were assumed to be in a rendezvous camp being organized into brigades and divisions preparatory to active service, and contemplated that you would avail yourselves of this time to practice and teach the duties most essential in such service, and which you may have had but little opportunity to learn in your armories or encampments.

Captains of companies will now begin to realize the responsibilities that rest upon them; that they are not simply to command or lead their men, but that they are to care for them as a father for his children. The proper preparation of the food for his men, the teaching, and, if necessary, the rigid enforcement of sanitary regulations are things which but few captains will probably know anything about, except what they may have learned from books or lectures, but which they must now quickly learn by practice. Staff officers will now find that the positions in which they had but little to do and small chance to learn at home have now become

positions of vast importance, on which the welfare and condition of the whole command depend.

It is also during the period you remain in this rendezvous camp that you should both teach and enforce discipline. There is but little trouble in teaching intelligent men the reasons for and necessity of discipline in an army, and to impress them with the fact that upon discipline depends their own comfort and safety, their own lives and the lives of their comrades, the success of their army, and possibly the fate of their country.

In teaching raw troops the necessity of discipline, care should be taken to disabuse their minds of the idea that it involves degradation or humiliation of their manhood, and that instead of being intended for the enlisted man alone it is equally applicable in every grade of rank, even to the commanding general, who is amenable to the discipline of the law and the requirements of his Government. While true that the necessity of discipline may be readily learned by intelligent men, it is nevertheless true that habits of discipline can only be acquired by such long experience that they become instinctive. The raw and intelligent soldier practices discipline as he would the manual of arms; the old soldier yields to it without thought. The few men that you may find in your command who will not readily accept the teachings of discipline, or who may be disposed to test the meaning and strength of it, must be dealt with summarily and severely. In fact, it is during these early days of your service that your men will test your knowledge, your capacity, your temper, your strength of character—in fact, every quality that you possess—and measure you by an inexorable standard that rarely fails. It is well for you and for the future usefulness of yourself and your command if you stand the test.

The fourth lecture assumed, that the organization of

the army having been completed, you are ordered to march. It is scarcely necessary for me to call your attention to any of the salient points of the instruction conveyed in that lecture. You have seen two men at the end of a journey; one with his horse fresh and in good condition, ready for a start the next morning; the other, who has traveled only the same distance and taken the same length of time, with his horse worried, weary, broken down and unfit for service for several days. It is the same with a march. The object-lessons relative to marching is to teach you to so conduct it that you will bring your command to its destination with every man in his place and every one fresh and efficient. The army that can march the longer time and achieve the greater distance with the least fatigue will invariably not only conquer its adversary, but will win the campaign with less fighting and less loss of life than would otherwise be possible. Above all, do not forget the old military maxim that "armies move on their bellies."

The fifth lecture instructed you in outpost duty and the methods of obtaining information of the enemy by reconnoissances. No duties of a soldier are more important than those embraced in that lecture, and the lecture was so thorough an exposition of its subject that it is unnecessary for me to do more than commend it to your careful study. In combat or battle the individual soldier or officer is but a unit in one vast whole that is being handled and applied to produce results of which the individual may be entirely ignorant, and to accomplish which it is only necessary for each individual to do what he is ordered to do without hesitation and with unflinching courage. But in the performance of outpost and reconnoissance duty the results of a carefully planned campaign or the fate of an army may for a time depend upon the intelligence and action of a subordinate line

officer. It is, therefore, necessary for the proper discharge of these duties that every subordinate officer should have a knowledge of the primary principles governing all military operations, such confidence in himself that he will not hesitate to assume grave responsibilities, and so command the confidence of his men that they will advance to the attack of an overwhelming force, retreat before the advance of an insignificant one, or die at their posts, as the officer may deem necessary. In the performance of these duties a subordinate officer will have more opportunity to display his military ability, to secure the confidence and approval of his superiors, and to attain promotion and preferment than in any other line of duty that may fall to his lot during his term of service.

The sixth lecture was devoted to field fortifications. While it may not appear necessary that officers of the line should be thoroughly instructed in the principles and methods of field fortifications, it is nevertheless of great importance that they should acquire sufficient knowledge of their principal forms to be able to apply the best methods of attacking and defending them, and also to learn sufficient of the principles on which they are laid out to be able to apply those principles in the construction of hasty entrenchments in the face of the enemy. The part that hasty entrenchments must play in future wars was first exemplified during the latter part of our late civil war, and the lessons taught by that experience were taken up and so thoroughly exemplified in subsequent European wars that it is safe to predict that an entrenching tool will, in the future, be considered as important a part of the infantry soldier's equipment as the rifle.

The seventh lecture of the course assumed a demonstration and attack by the enemy on the position that

you had been occupying during your term of service, and consequently involved a thorough description of the modes of attack and defense under the methods of modern warfare. While it may not be necessary for you, as subordinate officers, to master the principles of the art of war, to be conversant with grand strategy or with tactical maneuvers, it is nevertheless true that in proportion to the degree you acquire knowledge will your value as an officer increase and your chances for promotion in active service improve. The same principles that govern the movement and handling of the largest possible body of men are applicable also to the smallest tactical unit that may fall to your individual lot to command, control, and direct. You should therefore strive, so far as time and opportunity will permit, to acquire knowledge of the principles governing attack and defense, as it may fall to your lot to apply them when in command of a small detachment on outpost or reconnoissance duty, or in attacking or defending a small post, or even in the midst of a great battle when the small unit you command may be brought in contact with a similar unit of the enemy. The tendency of modern war is to open order or extended formation for the attack, instead of the old methods of close order and heavy columns of attack. This change is based on the destructive power of the long range and rapid loading rifle, which it is assumed would destroy an attacking force disposed in the old formation before it could come in contact with its adversary. Theory has even outstripped practice in advocacy of the extended formation, and it is possible, as usual in such cases, that the pendulum of reform has swung to its extreme limit, and that the true methods will be found in practice to be a proper combination of both systems applied according to conditions and circumstances. It is apparent, however, that in

future wars far greater responsibility will rest on subordinate officers, and they must possess superior qualities of intelligence and command. You must therefore realize that to master the profession which you have voluntarily taken up as a pastime or a duty you can no longer waste all your efforts in teaching mechanical perfection in the exercises of the manual of arms or devote your studies solely to acquiring a knowledge of the drill book.

I would therefore urge you to carefully study the lecture on "Attack and Defense," as it gives you in a most condensed form the best lessons of modern warfare, selected and modified by the practical experience of the officer who delivered it. Apply the principles taught in it by devising problems for yourself and solving them; or, what is better, when you are in the country pick out a good natural location and consider how you would attack and defend it. You will find it a pleasant recreation that may relieve some irksome hours of your summer vacation.

In closing this course of lectures it is appropriate that a few words should be said relative to the importance and necessity of maintaining a well organized and efficient militia under our form and system of government.

It is stated in the preamble to the Constitution that one of the principal reasons for forming the federation of the States was "to provide for the common defense," and the provisions for such defense were clearly committed to the military training of the whole body of the people rather than to a standing army. Not content with the affirmations of the original Constitution, the purpose and opinion of its framers were reiterated and unequivocally expressed in the second amendment to it, which declares: "A well regulated militia being necessary to the security of a free State." There has never been any difference of political opinion on this vital

point in our institutions. Washington, as the exponent of the Federalist party, said to Congress, "That the devising and establishing of a well regulated militia would be a genuine sourse of legislative honor and a perfect title to public gratitude." Jefferson, the leader of the Anti-Federalists, declared that "For a people who are free and who propose to remain so a well organized and armed militia is their best security."

Although the necessity of maintaining an efficient militia was thus asserted by the founders of our Government, and although their assertions have been acquiesced in by all of our subsequent statesmen, time has nevertheless demonstrated the fact that under no other form of government is it so difficult, owing to the indisposition of the people to submit to the enforcement of military duty in time of peace. It is due to this indisposition that the form of militia contemplated by the Constitution and provided for by existing law gradually ceased to exist, and finally has been wholly replaced by the modern system of volunteer militia. When Congress recognizes the fact of this important change of system by legislation to foster and provide for it, and when the States recognize the fact that the Constitution contemplates that the militia should be more national than local in its character, we will have a reserve army of young citizens on which the country may confidently rely in time of peril. Unfortunately in all matters relating to the army, the militia, or means of national defense, the old couplet of Rabelais is peculiarly applicably to our people:

> "The Devil was sick, the Devil a monk would be;
> The Devil was well, the Devil a monk was he."

Even the terrible lessons taught in the beginning of our civil war, by the enormous waste of life and money, have already lost force and effect, and our people and

their legislators are wholly indifferent, if not inimical, to maintaining a militia, except in those States in which enormous accumulations of capital and property are subject to attack and plunder by correspondingly large aggregations of the lawless elements of society; and in those States the militia is regarded solely as a reserve police force rather than as a unit in the means of national defense.

Every nation maintains some form of militia as a reserve to its standing army, and the smaller the standing army the greater the necessity that the militia be thoroughly organized and efficiently trained.

Under our form of government the militia has two distinct functions: for the States separately, it is their reserve police force for the preservation of order, the support of civil authority, and the enforcement of law; for the States collectively, it was intended by the Constitution to be a military force trained to be a reserve or support to the Regular Army in sudden emergencies, and a school of instruction in which the youth of the country should receive a sufficient amount of military education to enable the country to raise efficient volunteer armies when needed. These two distinct objects of the militia are skillfully provided for in the Constitution, which delegates to Congress the power "to provide for organizing, arming, and disciplining the militia," and reserves to the States the appointment of the officers and the authority to train the militia; but the latter reservation is carefully limited by the proviso that they shall train them "according to the discipline prescribed by Congress."

The wisdom of the men who founded our Government, and the necessity of carrying out their theories by maintaining an efficient militia, is clearly demonstrated by the condition of our country to-day. Rich,

prosperous, devoted to agriculture, manufactures, a commerce, we apparently have no danger threateni us, while our very condition constantly invites dang In case of threatened danger, foreign or domestic, t small body of regular troops that could be summon to our defense would be wholly inadequate, and t mass of patriotic citizens that might volunteer for defen would simply become victims of ignorant zeal, and the lives and treasures be wasted. In fact, the Governme is so careless of danger that it could not to-day arm a equip the most insignificant volunteer force before in pending danger had developed into overwhelming di aster and national shame. It is therefore wise, and is necessary to the future security of our country, th we maintain such an efficient militia that it will be un versally counted as a material element in our means national defense and thereby secure us against attac

Persevere in the patriotic work in which you are e gaged. Whatever you may accomplish, either indivi ually or as an organization, in maintaining an efficie militia will make you better men physically, mentall and morally, and will at least enable you to carry throug life the proud consciousness of having done your dut Nor is it impossible that occasion may arise on whic the application of the knowledge and skill you are no acquiring may entitle you to the everlasting gratitud of your country.

ADDITIONAL LECTURES.

LECTURE NO. 9.

BY MAJOR GEORGE HENDERSON, SURGEON GENERAL D. C. MILITIA.

Preservation of Health; Simple Remedies for Ordinary Ailments; Care of Wounded; Sunstroke, Freezing, Cuts, Bruises, Burns, and All Ordinary Accidents.

The subjects assigned to me for this evening's lecture are entirely too extensive to compress within the limits of a single lecture an exhaustive presentation of each of them; hence you may only expect a general outline.

Our first subject: "What are the duties of members of the Medical Corps of the National Guard regarding the preservation of the health of the members of their commands?"

The popular idea connects the chief duty of the army surgeon with the battle-field and its scenes of suffering and death. The defiant shouts of opposing lines, the rattle of musketry, the gallant charge amid the thunder of artillery, idealize the popular battle picture. Battles are not of every-day occurrence; but death breathes his venom every day and night over our camps in a steady stream, making the weak fall and the strong weak. Should you neglect the hygienic government of your camp, you do it at great peril, for there is no noise in this conflict, although it is more deadly than

battle; it is as serene as the summer morning, yet it is pestilence that walketh in darkness and wasteth at noonday; it is a veritable thief in the night, and alarms us as we realize the fact that for every soldier killed in battle there are *two* soldiers who fall victims to disease, and for every soldier who is discharged from wounds there are *three* soldiers who pine out a shortened existence battling with disease. Look well, then, I say, to the hygienic condition of your camp. How is your drainage? Where does it fall? How far from your water supply? Make a special sanitary inspection of your camp every day; keep an eye on the "officer of the day," and see that his police system is perfect in every particular.

Now let us speak of the personal habits of the soldier as regards his individual health. This is, however, beyond the province of the medical officer, but falls to the lot of the company commander, his officers, and non-commissioned officers. Every company commander should, by a due study and observance of the laws governing health, be able to direct the personal hygienic life of every man in his command, see that he cultivates habits of cleanliness, habits of temperance and prudence in eating, habits of exercise, habits of physical improvement, habits of bathing, and habits of regular sleep. We all know the force of habit—"when evil, a curse; when good, a blessing."

Our next subject: "Care of wounded. Description of first thing necessary to be done in cases of gunshot wounds and fractures of bones."

CARE OF THE WOUNDED.

A glance at the history of military surgery shows that attention is directed to the care of wounded in proportion to the degree of civilization of nations.

In regard to the requisites involved, the closest approximation to their fulfillment was in the Franco-Prussian war of 1870–'71, and as the final results of all labors directed to this end, two problems have originated whose solution must be sought in the future if we wish to attain any real progress in the field of military surgery. The first problem implies the task of combining the most earnest endeavors for the care and treatment of the wounded in war with the maintenance (hitherto neglected) of the hygiene of soldiers in time of peace. The second problem is the organization of volunteer corps of trained nurses for the wounded in time of war. You should make such corps, by a careful course of instruction, serviceable to the widest possible extent. This is the field in which the medical officers of the civil soldiery of the country can build lasting monuments to their honor by adding such schools of instruction to the organizations of the National Guard all over the land.

It will be necessary, of course, for the medical corps of the National Guard to acquaint themselves, 1st, with the sanitary establishment of the Army in time of war; 2d, with the duty of the surgeon in time of war, either upon the battle-field, which is the place for immediate dressing (the battle-field hospital), or at the depot or general hospitals.

But as our next subject for the evening is a "description of the first thing necessary to be done in gunshot wounds," we will stop at the place of immediate dressing, the battle-field hospital.

The hospital should be located on the battle-field, or as near the battle-field as possible, where the position is sheltered from musketry fire, and marked by a hospital flag. If possible, a plot of ground should be chosen with a group of shady trees; perhaps, too, with a brook of

running water near by. The general surface should be level, so that a tent may be pitched, if necessary.

An incident which occurred in my army life at the battle of South Mountain, Maryland, in 1862 will illustrate:

Our line had been in action, slowly advancing, but finally came to a halt. The firing had almost ceased. We were all lying down, when my company commander called my attention to four men who were going out in front of our line. He ordered me to take a file of men and arrest them, which order I immediately obeyed. On overtaking the squad I discovered that it was an assistant surgeon, with two men, who had in charge a wounded man. I approached the surgeon and said to him, "Sir, I have orders to arrest you;" but he wouldn't arrest, and continued his advance, while he and I argued the case. Just then a perfect storm of bullets came, and we all struck a double-quick in the direction that he was going. I soon discovered that he was making for a cliff of rocks, at which place we soon arrived and were protected from danger or injury. I said to him again, "I have been ordered to arrest you, and you must go back with me. You are within forty yards of the enemy's line, and you will be captured, sure." I never shall forget the expression of that fellow's face as he squared himself in front of me, and with an oath said, "All the sergeants in the Army of the Potomac and in hell can't take me away from here. I have been looking for a place to establish my battle-field hospital, and I have found it." I said to him, "Why, sir, you are in advance of our line." He remarked, "The hell I am! Well, you just go back and help bring up the line." I found I could do nothing with him, and returned. In a short time our line did advance, and the doctor's cliff

of rocks became the general battle-field hospital of the battle of South Mountain.

GUNSHOT WOUNDS.

It is a well-known fact that in modern warfare gunshot wounds predominate over all other forms of injury. During the late war, there were 408,172 cases of injury, of which 58 per cent. were gunshot wounds. In the campaign of 1866 the wounds in the Prussian army, numbered 13,202 cases, of which 79 per cent. were gunshot wounds. Still more apparent are the relations in the statistics of the war of 1870–'71, in which the entire loss of the Prussian army amounted to 65,610 men, of which 86 per cent. of which were gunshot wounds.

We will now consider the treatment of gunshot wounds. The first duty to be performed must consist in the control of hemorrhage and the administration of stimulants when necessary. Should the hemorrhage be of sufficient magnitude to threaten life it should be controlled at once.

The general treatment of hemorrhage when thoroughly understood can be applied in special cases without difficulty.

In this connection, however, it will be well to consider nature's methods of closing bleeding vessels before we pass to the appliances of art, as our efforts are simply to copy nature as far as possible.

1st. There is always a contraction of the muscular fibers in the vessels, induced by the injury. This contraction often closes the wounded vessel, and the bleeding stops.

2d. An artery often retracts within its sheath when divided, and the effused blood coagulates in front of it and controls the hemorrhage.

3d. The blood may collect on the surface and compress the wounded vessel and stop the bleeding.

4th. If the injured vessels are small the bleeding will cease by coagulation of blood within them.

5th. Should the patient faint, the action of the heart has been partially suspended and coagulation may take place before a normal action of the heart can again be established.

Now, before we proceed to the consideration of the methods for controlling hemorrhage, we will inquire what are the symptoms of dangerous hemorrhage. Arterial hemorrhage is attended, as you all know, with serious consequences; fortunately it is readily recognized. The blood is of a bright, scarlet color, and is forced out in jets. This characteristic spurting is caused by the intermittent contraction of the muscles of the heart driving out the blood.

Venous hemorrhage is distinguished from arterial hemorrhage by the dark-blue color of the blood, which never flows in repeated jets, but oozes slowly from the wounded surface. This form of hemorrhage is comparatively harmless, unless occurring from large veins. In large wounds, arterial hemorrhage generally predominates. In small wounds there is a mixture of both varieties.

The constitutional symptoms accompanying excessive hemorrhage are distinctly marked. The lips and cheeks rapidly assume a pallid hue. There is great restlessness and anxiety. The extremities are cold, and often bathed in a clammy perspiration. The respiration is weak and sighing. The pulse becomes small and rapid, its increasing rapidity being due to the efforts of the heart to make up by frequent impulses the diminished quantity of blood sent to the tissues. The

patient complains of vertigo and dimness of vision; is unable to articulate plainly, and finally lapses into a state of unconsciousness, followed by a slight convulsive movement, and dies. Thus we have the symptoms of fatal hemorrhage described.

What are the methods for stopping external hemorrhage? Of all surgical methods there are none more efficient or available than pressure. It can be employed over the main artery of the limb between the wound and the heart or directly upon the wounded part. When an artery is to be compressed an instrument called the tourniquet is generally used. If, however, this is not at hand an improvised tourniquet may be applied as follows: A handkerchief or piece of cloth torn from the clothing is passed loosely around the limb above the wound, and its ends fastened together. A small block of wood, a chip or stone, a folded towel, or any substance from which a firm pad can be extemporized is placed over the artery and under the handkerchief or cloth encircling the limb. A stick measuring five or six inches in length is then passed under the handkerchief or cloth at right angles and twisted around until the pad compresses the artery firmly. Turning the stick draws the handkerchief or cloth very tightly around the limb and over the artery, so that it is thoroughly secured.

Should bleeding occur from the upper extremity at any point below the arm-pit, it may be temporarily suppressed by placing a piece of wood two or three inches wide under the arm at right angles with the body, and then pressing the arm firmly against the chest walls. A large book will answer the same purpose. In all cases the material employed must be placed as high as possible in the arm-pit. When the wound is situated below the knee-joint, the bleeding

may be diminished by raising the limb and placing it on the back of a chair or over a stick or rail, so that pressure will be made in the popliteal space. The weight of the limb in this position is sufficient to close the popliteal artery. Pressure may be made in the wound, but never with the fingers or thumbs, for fear of infection.

COLD.

Next to pressure is cold. Cold is one of the most useful adjuncts in suppressing hemorrhage. It is employed in various forms. For moderate bleeding, cloths wrung out of cold water and placed over the point will answer. Ice, in solid lumps or powdered and secured in towels, is excellent in profuse hemorrhage. Cold acts by stimulating the arterial walls to contract and by assisting in the formation of coagula. Cold and pressure can be used together.

STYPTICS.

Under this head are included all medicinal agents which control hemorrhage. The most efficient are certain preparations of iron, as solutions of the persulphate and the sulphate, commonly known as "Monsel's solution." Nearly all the vegetable astringents belong to this class. The best are tannic or gallic acids, oak bark, catechu, and nutgalls. Alum and common salt are sometimes used. The iron and other substances are applied by means of a camel's-hair brush or piece of sponge. These agents act by coagulating the blood and by contracting the muscular fibers of the vessel. The coagula thus formed should not be removed for several hours, for fear of a return of the bleeding.

TORSION.

This method consists in seizing the bleeding vessel with forceps and twisting it.

LIGATION.

This is the last resort, and must be used when pressure, styptics, and other measures fail. The ligature generally used is a silk thread. The bleeding vessel is first seized with an artery forcep, the ligature or thread passed around the vessel and tied, thus stopping the flow of blood.

RESTORATION.

After the cessation of the hemorrhage, the lost vitality of the patient must be restored. He should be securely wrapped in blankets, and warm pieces of stone or chunks of green wood that have been thoroughly heated placed at his feet and around his body. A tablespoonful of brandy with a few drops of ammonia should be administered every fifteen or twenty minutes, or at such intervals as the case may require, until reaction is thoroughly established. If there is much nervous excitement, a small quantity of morphine may be given hypodermically.

Assuming that the patient has recovered from all shock from hemorrhage, we next proceed to examine his injury and prepare him for removal from the field. If his injury is only a flesh wound, all the treatment required is to dress the wound, which must always be done antiseptically. The most convenient form of antiseptic treatment known at present is by the use of bichloride of mercury; it can be carried, in the form of a compressed tablet, in the surgeon's pocket or medicine case. Drop one or two tablets in a quart of water and you have an antiseptic lotion. If the injury be one of fracture of bones, you must apply a splint. If boards or pasteboard cannot be obtained, you can improvise a very serviceable splint by cutting small twigs of trees about the size of your finger and placing them around

the limb, secured by a roller bandage. This will afford ample support until the man can be transported to the place of permanent dressing.

We will now talk about treatment of sunstroke, freezing, cuts, burns, and bruises.

SUNSTROKE.

We have records of sunstroke from the earliest historical times. It was fully described by ancient medical writers; also from biblical history, as follows: "Manassas was her husband, who died in the early harvest; for he stood among them and bound sheaves in the field; the heat came upon his head and he fell on his bed and died." Another instance relates to the son of the Shunammite woman, who was resuscitated by Elisha: "And when the child was grown, it fell on a day that he went out with his father to the reapers. And he said unto his father, 'Father, my head, my head!' and when his father had taken him up and brought him to his mother he sat on her knees till noon, and then died."

Sunstroke may be classed under two heads:

1st. Those in which the nerve centers are principally involved, the cerebro-spinal variety.

2d. The varieties which are characterized by exhaustion.

Death in the former case results from high temperature and overstrained nerves; in the latter case by prostration and exhaustion. In my opinion, sunstroke is one of the most serious accidents which can happen to the soldier, and the treatment of which is often misapplied. In those varieties of sunstroke characterized by exhaustion the patients are apt to die suddenly, especially if they are not treated with great caution. In

such cases the countenance is pale, the surface of the body is cold, the respiration is sighing or gasping, instead of being noisy; the pulse is rapid and weak, the pupils of the eye are dilated. Should you apply cold water, as is generally done in all cases of sunstroke by the inexperienced, you will in many cases destroy the life of the patient. Instead of cold water, you should wrap the patient in a blanket, remove to a cool spot with an abundance of fresh air, place in a recumbent position, and give a stimulant, and apply a mustard plaster over the heart and upon the calves of the legs. So let me repeat, if you have a case of heat or sunstroke with a pale face, beware of cold water.

On the other hand, if your case is one with a red face and high temperature, apply cold water. In these cases the breathing becomes noisy, the pupils are contracted, and the skin is intensely hot. The temperature often goes above 105°, and in one case that came under my observation it reached 109°, and yet the man survived. The treatment in such cases is cold water, the more the better, until the temperature is lowered. The patient should be removed to a spot protected from the rays of the sun, the clothing stripped off, and a stream of water poured over the body. The vessel containing the water should be held four or five feet above the patient, in order that he may receive the benefit of the shock. The stream of water should at first be directed on the head, then on the chest and abdomen, and finally on the extremities until consciousness returns and the temperature falls to 103°; then cover the patient with a blanket, apply a mustard plaster to the back of the neck, and give twenty grains of bromide of soda. If the bowels are constipated, give a laxative, which will have a good effect and prevent, possibly, by the revulsive action, brain trouble.

Frost-bite may be divided into three grades, analogous to those of burns. The first is simply a redness of the skin, the second the formation of a blister, the third a slough. The first degree of frost-bite is well known. We might regard the so-called deadness of the fingers as its mildest form. The finger becomes white, the skin wrinkled, sensation is diminished, and after a time these symptoms pass off; then the skin becomes red, the fingers swell, and there is a peculiar itching and prickling sensation. This increases the more quickly warmth follows the cold. The redness following this degree of frost-bite may sometimes become permanent, the capillaries remain dilated. It is especially apt to occur in frost-bites of the nose and ears, and is usually incurable. The second degree of frost-bite is that in which, besides redness of skin, there is a blister. It is more severe and is often accompanied by complete loss of sensation of the part affected, and there is always danger of mortification. In the third degree, if the part is completely frozen, or "frozen to death," as it is usually termed, it soon becomes swollen and discolored, and gradually passes into a condition of slough.

TREATMENT FOR FREEZING.

A person who is frozen should never be taken to a warm room or have warmth applied to the frozen part. An abrupt change in temperature would be almost necessarily fatal to the part. The temperature must be gradually raised; consequently, the patient should be carried to a cool apartment and the parts frozen rubbed with snow or cold water. When reaction takes place, stimulating applications are to be used to relieve the

itching and burning that accompanies the return of vitality. This condition is known as chilblain. The best remedy is tincture of iodine, or diluted carbolic acid, painted over the part.

CUTS, OR INCISED WOUNDS.

Incised wounds are a division of the parts, more or less extensive, according to the extent of the injury. The fibers have only been simply divided; there is no bruise or laceration; hence they are not likely to be accompanied by severe inflammation, nor are they apt to slough or suppurate. Upon the extent and color of the blood one is enabled to judge of the kind of vessel injured. To check ordinary hemorrhage in cuts, all that is necessary is to bring the edges of the wound together and apply gentle pressure. Should the bleeding continue, however, it may be necessary to apply a styptic or ligature. As soon as the bleeding ceases, the edges are to be brought together in their entire extent and retained in contact, either by adhesive plaster or, if necessary, by means of sutures. The best primary dressing for an incised wound or cut is a carbolized water dressing—say, ten drops of No. 1 carbolic acid to the pint of cold water—and apply for twenty-four hours.

BRUISES, OR CONTUSED WOUNDS.

Bruises are usually produced by great violence, and are accompanied with great disorganization. Blood is extravasated, cellular tissue is broken down, muscles bruised, and the surrounding parts much disturbed. They bleed but little, in consequence of the outer skin not being broken. The pain which accompanies a bruise is in inverse ratio to the amount of injury. When there is a moderate contusion or bruise the pain is generally severe, and when there is a violent degree

of contusion the patient scarcely suffers any pain until reaction takes place. The best treatment for a bruise is to keep it wet with alcohol well diluted with water—say, one part alcohol to three parts water. After the lapse of a few days the part may be bathed with soap liniment or diluted tincture of iodine.

BURNS.

There are few injuries which combine so many unnatural elements as burns. In none do we witness so much agony or such poor results from treatment. Burns are to be dreaded in their remote results as well as in their immediate consequences. Recovery is often attended in many cases by hideous deformities. Many cases of burning arise from carelessness in the use of kerosene and other explosive oils in barracks and tents. These accidents arise from filling lamps near a light, or from pouring kerosene on kindling wood to make a fire. Dangerous burns are also produced by premature explosion of shells, blank cartridges, etc.

In ordinary burns the danger to life varies with the seat and extent of the tissue destroyed. Burns of the thoracic or abdominal walls are always attended with great danger.

The treatment of burns consists in relieving the sufferer by the use of opiates. It must be borne in mind that when excessive pain exists the system can bear double doses of narcotic medicines; therefore do not let the unfortunate suffer, but relieve him at all hazards.

LOCAL TREATMENT OF BURNS.

There are three important rules to be remembered in the local treatment of burns: 1st, exclude atmospheric air; 2d, only remove the dressing when it becomes loos-

ened by the discharge; 3d, prevent, if possible, the contraction of the scar.

In simple burns, which only involve the outer skin, very little treatment is necessary. The part may be kept wet by cloths dipped in a weak solution of soda-water in the following proportion: One teaspoonful of bicarbonate of soda (baking soda) to a pint of water. This application will soon relieve the patient. When the true skin is partially or completely destroyed, apply lint or antiseptic absorbent cotton dipped in a mixture consisting of equal parts of linseed oil and lime water (called Carron oil) and envelope the burnt parts with it. If the linseed oil and lime water are not at hand, apply flour and molasses. Whatever dressing is first employed should not be disturbed until separated by exudation, unless a fetid odor should be discovered; then the dressing should be changed, the parts thoroughly washed with some disinfectant liquid, such as carbolized water; then dress with iodoform. During the healing process there is a great tendency to contraction of the parts, and this should be counteracted by splints or bandages, thus overcoming some of the hideous deformities following injuries by burns.

LECTURE NO. 10.

BY MAJOR J. M. POLLARD, INSPECTOR GENERAL OF RIFLE PRACTICE, D. C. MILITIA.

Rifle Practice.

Rifle practice is for the education of the infantry soldier in the use of his weapon. It may even be considered the graduating exercise of his studies. All of his other military studies tend to this end. From his first lesson as a recruit, in foot movements and squad drill and through the company and battalion movements, all have been designed to eventually place him quickly and certainly, by the most direct lines, in front of his enemy. Here, and often while under fire, he is to be moved from point to point as needed, and a large number must act as a unit, without confusion, at the will of one directing mind. Hence, proficiency in drill is indispensable. Of two bodies of men, the best drilled will be most quickly in position, and, other things being equal, will suffer least loss in getting there.

But this in itself does not hurt the enemy. Perfect evolutions in themselves inflict no damage upon an enemy. Rifle practice determines what is to happen after the issue has been joined.

Of two bodies of men, equal in number and armament, let us suppose one to be composed of frontier sharpshooters, ignorant of all military discipline, knowing nothing of the rudiments of drill, and the other of crack drill companies wholly without rifle practice. I have

seen the latter with long lists of victories to their credit who never possessed a ball cartridge. I am not going to set these people to fighting each other. No one could predict just what would happen in such a case. It would be a good question for a military debating society. We will assume that they are to fight a common enemy. What shall be done with them?

It will be easy to get the crack drill companies exactly where we want them. But what will they do after they get there? It will not do to expose them to trained sharpshooters. It is a more appropriate task for our frontier sharpshooters to engage them. There seems to be but one thing to do, and that is to form the drill companies in single rank, put the frontier sharpshooters behind them as rear-rank men, and tell them to follow their file leaders wherever they go. In this way the drill companies might pilot the frontier sharpshooters into position, and the frontier sharpshooters might protect the drill companies and operate against the enemy. But this would not be an economical army.

Each of these bodies of men needs the special training of the other. Neither are soldiers; they are utterly inefficient as such; but obviously they do not need training of the same kind, nor to the same extent. The sharpshooters do not need the ultra refinement of the competitive drill company, as it would not add anything to their efficiency; because, beyond a thorough knowledge of the essential company and battalion movements, all else would be superfluous. On the other hand, the drill companies could not possibly acquire too great proficiency in the sharpshooters' art; precision and accuracy of fire cannot be carried to excess, and ability to send a bullet exactly where it is most destructive is the highest efficiency of a soldier in action.

There would be but little point in what I have said

were it not for the fact that National Guardsmen can give but little time to learning the duties of a soldier, and must carefully decide how best to employ it. What division of this time shall we devote to drill and what proportion can we, with our limited facilities, most advantageously apply to rifle practice?

I have anticipated the answer to this question in what I have already said. Whenever you can execute with certainty, without confusion, all essential movements, and practice them sufficiently to keep them well in mind, you have done all that is necessary so far as drill is concerned, and should devote the remaining time to the study of the use of the rifle.

I consider it not only unwise to waste time in acquiring ultra perfection in the mechanism of drill, but am sure that the extent to which drill practice is carried by some of the National Guard is positively injurious, as it detracts from the fighting capacity of a man. I mean that the habit of doing everything in cadence, in one, two, three time, becomes a second nature—something done when it should not be as well as when it should. It is very desirable in the foot movements, very essential to a correct performance of the manual, but very bad when applied to loading and firing, as it is much too slow and destroys all accuracy of aim. It trains all the faculties by the ear instead of the eye. In drill the soldier is taught to aim and, with finger pressing the trigger, to wait, straining the ear for the word of command, utterly regardless of where the rifle is pointing he is to fire at the word. The rifle may be pointing at the sky or at the ground a hundred yards away, but if they are sufficiently uniform to present a pleasing appearance to the eye of a spectator the drill-master is satisfied. The essential is that all the hammers must fall as one; there must be but one click, but one report. When this

is perfect the drill is perfect. The soldier does this with his ear. If he uses his eye at all, and usually he does not, the sudden wrench upon the trigger will point the rifle twenty feet away from the mark he is aiming at.

This training of the finger to act in obedience to the ear is splendid training for a musician, but very bad for a marksman, and it becomes a fixed habit. Let a man acquire a bad habit and try to break it off, he will find how much harder it is to do that than it was to learn it. I have laid much stress upon this point, but it is only to insist that the habit of pulling the trigger with a competitive-drill twist is the one that instructors have the most difficulty in correcting. When a man misses the target the cause, in nine cases out of ten, is a too sudden pull on the trigger; but every time he obeys the command "fire" when at drill he is fixing this habit, and his drill-master is inculcating vice in his entire command when he gives the order.

The word "fire" should never be used except in the sense of commence firing, and should be understood to mean "fire when satisfied with your aim." Always aim at something, no matter what, and with practice the act of pulling the trigger becomes as involuntary as putting out your foot in walking. The gun is discharged as soon as the aim is correct, and without conscious effort. This does not imply that the firing must be slow and tedious; it means simply that the eye and finger become trained to act in concert and with certainty. If the aim is quickly taken the finger presses the trigger at once and sharply; and if there is any delay the finger waits, but the marksman does not need to bother himself about it; he has only to be patient. The one mistake that is always a mistake is pulling the trigger in obedience to any order whatever except the signal given your finger by your own eye. This becomes a

matter of practice, and how to get this practice I will try to explain a little later on.

I will not take up your time by criticising things that should not be done, but I will mention one other bad result of drill teachings, and that is the persistent teaching of faults of position. This is thoroughly rubbed into men, and must be rubbed out of them to make them good riflemen. For instance, a man is taught in drill to make a quarter face to the right at the command "ready." With the gun thus held out in front of him there is no support for the arms; they do not brace and support each other, and unsteadiness results. More than this, the position is quickly wearisome and cannot be long maintained, so that continued firing would be difficult. Men should be taught in drill to face to the right, for by turning the left side squarely to the target the left arm is brought directly under the barrel and gives the best possible position for steady shooting, as well as one that can be maintained for a long time without fatigue. If the target happens to be an enemy, there is a great advantage in feather-edging, as it presents one-third less of the body for him to shoot at.

So with the other positions. In drill, the man is made to kneel and go through the motions of loading and firing without looking through the sights. He is rarely or never made to sit, though this is probably one of the most useful positions for actual warfare, and much more effective than kneeling. He is also drilled in lying prone, but always with the body in line with the direction of fire—straight—head to the front. Properly, the body should be at an angle, with the left shoulder presented to the target, and body extending backward and to the left.

In all these positions, the most serious fault is in practicing with the sights down and at point-blank range.

Kneeling or sitting, the elevations corresponding to the positions should be given and the sights adjusted to it, as it is almost impossible to get the head low enough to aim properly when the sights are down; and each change of elevation brings a change in the position of the face against the stock, gives a different bend to the neck, and in fact constitutes a difference in position.

This is still worse at five and six hundred yards. Here the chin can barely reach the stock, just lightly touching it; the rear sight is elevated far above the barrel, instead of being close to where the soldier has been practiced to look for it; so when he tries to aim, it does not look right or feel right; his cheek ought to be cuddled up against the stock; so he tries to make that feel a little more natural by twisting the stock over against his cheek, and that supports his head and seems a little better. But it is not right yet; so he tries the old position, with his cheek in the old place, and that feels all right, but does not look natural; then he reflects that the sights are elevated, and probably do not look natural; and so he lets go at a venture, and tears up the ground half way to the target. He has really been looking under the sight along the barrel and firing with no elevation

All shooting of this kind is worse than thrown away. It not only does not teach anything, but still further fixes bad habits. We cannot remedy these things in the gallery or on the range. It is properly a part of company instruction.

Full instructions will be found in Blunt's Manual, and men should not be brought to the gallery till they have been instructed in all the elementary lessons. Once showing them the use of the sights will usually be sufficient. Practice in the various positions should be a constant feature of drill, and the sights should

always be adjusted in elevation to correspond to the position.

Practice in aiming and sighting, if carefully followed, is almost as good as actual range or gallery practice, only it must be well and conscientiously done. The man must aim and pull the trigger as carefully as if on the range and trying to make a bull's-eye. If he merely puts up his gun without special aim at anything, and pulls the trigger without reference to a correct aim, the practice is of no use to him; it is worse than useless. If he tries carefully he gets the same training of the eye, muscles, and nerves, becomes accustomed to all the positions, and finds with practice just what positions are best adapted to his physical make-up. He learns that he is not restricted to any particular position at any range, but has quite a wide latitude for variation, and can squirm around till he finds what he wants.

Once a position is adopted it should be retained, and the man must try to assume it exactly in the same way each shot he fires.

When a man takes a gun in hand for the first time and essays to shoot he finds it very awkward. He has never assumed just that position before, and muscles that are seldom used are called upon for steady and sustained hard work. His eye is not accustomed to looking at three things at once and does not make sure of what is to be done. He sees a space between the sight and target and shoves the gun in that direction, and away past the target, then he pulls it back where it was at first, and so on. Finally he sees the sights and target mixed up together, and pulls the trigger. By this time he is nervous and trembling. He is trying to stiffen and brace himself into a piece of statuary, perfectly still and rigid, and when you think of it this is something he does not often do, but he tries it, and as

he is not a statue his body will sway a little, or a muscle relax, and that worries him, and he braces up harder and stiffens himself all over. Now when a muscle is strained it quivers, and that interferes with his aim.

The proper way to stand is with the left side to the target, feet slightly separated, weight about equally divided between the heel and ball of the foot, just an easy tension on the muscles of the legs and hips. Do not make any special effort to stand rigid. As to the muscles of the arms, shoulders, and neck, that is a different matter; let them all be locked together, take a good firm grip on the stock with both hands, press the stock to the shoulder, the face against the stock, the stock against the face and chest. Do not let any of these muscles move; they are all under tension and motionless; keep them so. If the gun is pointing somewhere near the target, that is all that is necessary. Do all the rest with the hips. Raise or lower the rifle by bending the body, and swing it from side to side by twisting the body. Here you have strong muscles under perfect control, accustomed to holding the body erect and steadily, and these quickly become trained to the work in hand.

Practice does the rest. I cannot profitably illustrate the positions for firing at other ranges, because each man must find the best position for himself, and there is quite a wide latitude allowed him to select from.

Gallery and range practice will simply be continuations of the practice we have been discussing, if this has been well carried out.

The gallery firing will test the accuracy of your aiming practice, and will be easy if you are well drilled in correct positions. The score you make will tell the story pretty closely.

There are few distinguishing features between range and gallery work. The same positions are taken in

each, the same elevations are required, the same care must be taken in leveling the gun, and just about the same scores are the result. The conditions of uniform light and absence of wind in the gallery ought to put the gallery scores a little ahead in a season's shooting, but a good score requires the same careful and earnest work that it does on the range, and is as hard to make.

The practice that can be had in the gallery is necessarily limited, and should therefore be regarded as merely a practical test of the correctness of your aiming and position drill. If, after being taught in the armories, a man fails at the gallery, it means that he has failed to understand his lessons. Try to find just what is wrong; perhaps he has some fault to remedy, something to unlearn instead of something to learn. Have some arrangement for fixing a gun in position, and have him aim at a spot and then see what he has done. Nine times in ten this will catch him. If it does not, persevere in finding the error. It is some mistake he is making in carrying out instructions.

With the single exception of nervousness consequent upon the recoil of the service charge, the range practice will simply be an extension of gallery practice. If the rifle is properly held against the shoulder, the recoil will not be unpleasant and will quickly be disregarded. It will doubtless lower the scores, but this will only be because the limited practice will not be sufficient to entirely overcome the nervous dread of full charges. Experienced riflemen have this trouble at the beginning of each season.

Estimating distances is acquired by comparing the appearance of objects of known form and size at different and known distances. It is rarely that occasion arises for any practical application of this faculty, and most of us give no attention to the matter. If called upon to

guess at any distance exceeding two hundred yards, the average man is liable to fix upon something very different from the real distance, and it is only by close observation that he gradually learns to associate a given number of yards with the appearance of an object.

Quick and accurate judgment of distance is essential to success in skirmish firing, and largely determines the effect of the fire in war. Practice at the figure targets used in the Army is probably the best and most practical school of instruction, and is sometimes supplemented by halting men at distances known only to the instructor and having each man estimate the distance, afterward correcting the errors and discussing the results.

Skirmish firing under the conditions of actual warfare is the ideal test of efficiency, but this requires rough and uneven ground, over unknown distances, where the position in firing would depend upon the spot where a man happened to be halted. At times this would be in a hollow where he would have to stand on tiptoe to see the target; at others he would have to fire through bushes or over or under logs and fences. If in high grass he would sit, and in high grain kneel or stand. Even moderately high grass will make it impossible to fire lying prone, because in this position he could not see above it. This illustrates the necessity for thorough training in all positions. Men in action should not expose themselves to an enemy's fire by sitting when they can fire lying down, or by standing when they can kneel or sit, and the very essence of skirmish practice is to learn and practice all the conditions of actual warfare.

Skirmish firing on the known-distance range, where all are familiar with the firing points, is not very difficult. It calls for strict attention to the points where halts are made for firing, quick decision as to distance

from the target, and equally quick adjustment of the sights. The firing cannot be deliberate or slow, even when firing but two shots at each halt. There is plenty of time, but none to waste. The skirmisher must be prepared to decide the distance, adjust his sights and take his position, and make allowance for wind, if there be any, in an instant. With a beginner the distance must be pretty well known to give him time to adjust the sights and get in two shots in fifteen seconds, which is the time allowed at each halt. With practice, the firing can be more rapid and the distance made more and more difficult of judging, and finally the figures can be substituted for the targets and practice conducted over wholly unknown distances or ground.

A man should be a marksman or, better still, a sharpshooter, at known-distance firing before practising him at skirmishing. This practice at regulation targets is now a part of the regular practice of the militia in most of the Western States.

I cannot say much of interest concerning competitive matches, aside from insisting on the necessity of careful and exact training, as nearly as possible, under the conditions of the match, and to briefly state a few essentials of such training or practice.

While steady practice is indispensable, it is very often overdone. A little practice carefully conducted is better than much practice hurriedly or carelessly done, and too great anxiety to win often leads to defeat. A rifleman who is well up in the general knowledge of the art is probably at his best after shooting regularly once a week for six or more weeks, and as nearly as possible the same number of shots, and at about the same time of day as the match is to take place. The practice should be as carefully conducted and as earnestly as in the match, and if it can be in the nature of competition, *all the better.*

There should be no sighting shots in any case, and no shirking on account of bad weather—that is, weather that would not stop a match should be practiced in, and it would take very bad weather to stop an important match. By stopping on account of rain a rifleman or team may miss exactly the practice needed to win.

Exact determination of the elevations required at all ranges is the first essential, and committing these thoroughly to memory is the next. If uncertain on this point, several points will be lost in finding the bull's-eye, and your competitors will not take such chances if you do. Observation of other conditions, such as wind and light, will soon enable you to make very correct allowance for all ordinary variations.

Practice as often as twice a week for two or three weeks before a match would be more advisable on the score of physical training than as rifle practice. A man gets a lot of exercise from firing ten shots each at four ranges, and finds it pretty hard work, and if not well seasoned is apt to get buised and nervous over it. He needs training for it just as with other athletic exercises.

Team practice may be considered the application of the combined experience and judgment of a dozen men to the firing of one shot, or rather to each shot fired. The judgment of the best rifleman on the team is applied to the work of those of least experience, and the result is, or should be, the bringing of all up to one high standard. But this does not apply only to a match; it must be a matter of the practice from first to last, and in this men must subordinate their pride in the individual score to the greater pride in the team total. It is, of course, a praiseworthy ambition to wish to lead the team score, and men should strive to do so, but only when every other man has done his best and made the highest score of which he is capable with all the assistance that can be given him.

The best practice for this sort of thing is nerve practice. Every practice score should be a competition. There should be something at stake; something to impress upon the mind the importance of each shot; something to make him feel just as he does in an important match. This gets him accustomed to it, and it does not come over him all at once, as it frequently does in a match, and rattle him.

Men are apt to get careless in mere practice and let their thoughts wander from the work in hand, which is making bull's-eyes, to the work up town, which is making dollars. They regard it as merely practice, with nothing at stake—a pastime they are fond of whenever they can spare the time; but if there is something at stake it keys the nerves to the concert pitch of a match, the attention does not waver for an instant, every point is watched, determined, and remembered, and the nerves become accustomed to this high pitch and to being steady and reliable under it.

Here comes in a conflict of interests. We want to help each other, honestly and squarely, and yet you want to shoot for individual prizes, and beat each other if you can. How is this feeling to be brought about? How are we to get each man to strive first for the team total as the highest ambition he has, and incidentally to try to win a medal for himself by contributing the highest individual score to that total? I do not know how to answer this, except by saying that the only way to do it is by resolving that it shall be done. We need just this thing; we need the keen, earnest competition as nerve training; we need the mutual coaching and instruction to enable us to shoot as a team; and, above all, we need the generous pride in each other and in the team that will enable us to first help every other man with our very best assistance, and then beat every

one of them if we can. This is the feeling that should animate a team.

It is the tail of the team, the weak and inexperienced men, that win or lose rifle matches. If one of these gets rattled—gets too nervous to lie still on the ground, or too nervous to see straight, as men sometimes do—the team loses. He will drop more points below the team average than the best ten men can make above it.

I have been talking about individual and team practice, when my subject was competitive matches. But if the practice I have outlined is properly carried out, the competitions, whether team or individual, will take care of themselves.

I would like, however, to explain to you that I regard competitive matches, with prizes attached to them, as the soul of all practice, and as the very best, wisest, and most economical investment toward the promotion of efficiency in the use of the rifle. Nothing else arouses so much interest in the work, and nothing else goes so far to maintain it.

Hence there should be something to be shot for and won in each of your companies, in each of your battalions, and in each of your regiments. Here the question of handicaps and points of allowance can be settled, if anywhere, without friction. If you have a favorite who is certain to win everything, fix it anyway you choose within the company. It is impossible for us to do this in the brigade. No line can be drawn that will not leave some one at the top and pretty sure to win, and the mere attempt to draw such a line will do far more harm than good. If it could be made perfectly fair to all it could not be made to seem so, and all the losers would growl at the unfair conditions. It is best in all battalion matches to exclude no member of the battalion, and in regimental matches to exclude no member

of the regiment, and that brigade matches should be understood to be for adult riflemen to contest and not to be won by novices or by lucky accident instead of skill.

Where two or three members of the brigade team are members of a company or battalion it might be advisable to have some prize in such company or battalion which they are not to compete for, but it would seem to be the proper thing that such men should wear their company medal for the best shot, otherwise the medal means something else; for instance, that it was won by the best of the men who could not shoot very well. Now, there is no objection to such men winning if it is understood that way. But you do not want it to be a medal purporting to be won by your best shot, and have everybody wonder how your crack rifleman, who is on the brigade team, failed to win it. He cannot explain that he was not allowed to shoot for it, or that he was handicapped beyond recognition, and so the impression is made that he was beaten in a fair fight, and the expert marksman does not like that, not even when it happens to be true.

I will tell you in conclusion how to keep your rifles in good condition, and I can do that in a few words: Keep them clean and do not let them rust. After using, or firing, breath slowly through them three or four times, then wipe them out well, and be sure to wipe them dry, then put an oiled rag through them once or twice. Sperm oil, or a good quality of vaseline, will keep them for any length of time free from rust if they are kept dry. If you have them out in rainy weather wipe them carefully before you put them in the rack; the next day will be too late; your good gun will be ruined for accurate long-range work. First wipe them dry, and then oil them; that is all you have to do.

LECTURE NO. 11.

BY SECOND LIEUTENANT JOHN P. FINLEY, SIGNAL CORPS, U. S. ARMY.

The Art of Signaling and its Relation to the Necessities of Peace and War.

HISTORICAL DEVELOPMENT.

The antiquity of the art of signaling is very great. From the earliest ages attempts have been made to communicate over long distances by means of visual signals of a primitive kind, especially beacons and prognostics.

In the Old Testament reference is made to the lighting of signal fires for the purpose of conveying intelligence, and at a later period, 500 B. C., history informs us that Agamemnon communicated over mountains and valleys by means of signal fires and torches.

The Tower of Babel was a form of visual signal, destined to serve as a mark or rallying point for the surrounding people.

During the war in Peloponnesus the Greeks made frequent use of signal fires, which were lighted upon high towers. The beacon, however, is a very imperfect signal, as ordinarily it can convey but a single meaning.

During the Trojan war the civilized nations were more or less acquainted with various signal systems which gave practical results of great value.

The conquest of Troy was signaled to Argos across the Ægean sea, over a distance of 330 miles.

When Mardonius, in 479 B. C., had captured Athens, he heralded the news of his success by fire signals from one island to another over the sea to Xerxes at Sardes.

In the sea battles of Cycicus and Mytilene the Greeks performed decisive maneuvers upon orders communicated by an alphabetical signal system.

About 200 B. C. a very ingenious signal was employed by the Greeks, which consisted of a torch with an apparatus for measuring the time intervals of the given signals, and thus gave in the earliest ages the first indication of chronosemic signals, which to-day are so well known to the Army and the Navy of the United States.

The Greek general Polybius, about 200 B. C., recommended the use of the torch signal as highly important for field purposes.

Prior to the time of Polybius, Cleoxenes and Demócritus devised important signal systems, which the first named improved and introduced into the military service.

The Romans were also informed as to the importance and practical utility of optical signals for long distances.

It is known that Cæsar employed these signals during his campaign in Gaul, which probably explains the rapidity of his movements and the skill with which his operations were planned.

During the Greek and Roman wars we have the first evidence of the existence of specially organized troops as signalists. They were designated by a Greek word which signifies "fire-bearers" or "fire-shakers," and rather implied the use of the torch or other form of portable light.

There are still in existence in certain parts of Europe, especially in France, towers of heavy masonry which were erected by the Romans as permanent signal telegraph stations.

The Carthaginians employed visual signals, and were thus enabled to maintain communication with Sicily.

The Gauls were also possessed of the means for simple and rapid communication by optical signals.

Among the Asiatic tribes of antiquity this means of correspondence was not unknown, and there are to-day signal towers upon the great Chinese wall which serve as points of observation against Tartarian invasion, and form connecting links in a complete chain of signal stations.

In Constantinople the night signals which were used for protection against invasion from the followers of Mahomet still remain in use.

During the war against the Moors, which lasted seven centuries, the Spaniards transmitted messages by means of fire signals and variously colored flags, displayed from dominating points.

During the 17th century there were occasions where commanding officers attempted to establish communication by a combination of artillery firing and volleys of musketry between the different corps of their armies and troops in besieged places.

Herodotus relates that King Perseus established signal lines over which he received all important messages by means of torches. Semaphoric signals had already been employed in the form of wooden blocks, which were suspended on poles and from towers, with means for raising and lowering them.

Hannibal employed the optical telegraph in his wars in Africa and Spain, and erected towers as signal stations.

With the discontinuance of long wars and extensive military operations the necessity for visual signaling fell into disuse and was quite forgotten during the middle ages, except by the Arabs, Kabyles, Gauls, and in

Switzerland, where the practice was still continued, though in the most primitive form.

In Scotland and among isolated people living in the mountains of northern Europe optical signals were in use from the 5th to the 15th centuries.

Swift and trusty messengers, who ran at full speed from hamlet to hamlet carrying peculiar symbols, which were designed to convey summons to the people upon any sudden or important emergency, was a method of signaling employed by the Scottish chiefs and ancient Scandinavians.

Upon one occasion during the civil war of 1745–'46 a message so transmitted passed over a distance of 32 miles in three hours.

But this method of communication was wholly inadequate to the increasing requirements of civilization. It was necessary to provide that the visual signal itself must carry the entire message.

The aborigines of North America were accustomed to employ language signals that by skillful application became intelligible at great distances. The Indians, especially the Western tribes, have long been familiar with the use of fire signals and torches for the purpose of communicating between distant points.

It is not unlikely that an important cause for the decline of signaling in the middle ages was found in the limited range of the human eye, controlled largely by the optical conditions of the atmosphere. In other words, the progress of the art was crippled for the want of the telescope. With the invention of this remarkable instrument, about the year 1590 or 1608, the increased usefulness of the optical telegraph became apparent and its revival began.

In 1617 Kessler proposed a system of night signals for long-distance communication. In 1623 the Marquis of

Worcester, in England, and in 1663 the Frenchman Amonton devised systems of optical signals which were productive of much practical good at that time.

The first employment of visual signals by European armies, after the close of the middle ages, was during the siege of Vienna, in 1683, when John Sobieski marched to the rescue and opened communication with the besieged town over the heads of the Turks.

In 1684 Robert Hook, of England, demonstrated the great advantage of the telescope for recognizing signals at great distances.

In 1780 Kempenfelt, of the English Navy, constructed the first flag signal code by employing a combination of different colored flags, the significance of which was carefully given in a prearranged code.

In 1786 Professor Bergsträsser constructed and operated at Hanau, Germany, a new optical telegraph (semaphore by day and lights at night) for both military and commercial purposes.

In 1792 the flags of Kempenfeldt's system were numbered, thus providing the means of grouping a large number of dispatches.

In 1790 Claud Chappe, a young French civil engineer, erected and operated at Brulon an optical telegraph, which excited the attention of the national government.

Breguet, a French watchmaker, improved Chappe's system, and in 1793 an experimental line was established between Paris and Lille (about 130 miles), with twenty-two stations, over which a signal was transmitted within the space of two minutes. Over the line from Berlin to the Rhine (480 miles) a short message was dispatched within fifteen minutes.

Napoleon I derived great advantage from the employment of these semaphoric means of communication, and under his orders lines were run in all directions from Paris.

A semaphoric telegraph somewhat similar to Chappe's system was introduced into England by Sir George Murray in 1795, and afterwards a line was established between London and Plymouth, which rendered much valuable service during the wars against France. It soon fell into disuse after the peace of 1815, and after the superior advantages of the electric telegraph became known this line sent its last message December 31, 1847.

The same optical system was introduced into Denmark in 1802, where a line was erected over the Great Belt, which proved of inestimable value until replaced by the electric telegraph.

Semaphoric telegraph lines were established in France in 1790; Sweden, 1795; England, 1796; Frankfort-on-the-Main, 1798; Denmark, 1802; Prussia, 1833; Austria, 1835, and in Russia in 1839.

This means of communication, first established by the French for conveying intelligence from the capital to the armies on the frontier, was finally employed for a great variety of purposes, political, military, and commercial.

In the United States the employment of semaphores for military purposes has received very little attention, yet this mode of signaling is well known to every railway system in the country.

A marked advance upon the semaphore was made in England by Sir Home Popham in 1801, who devised the system upon which the present International Code of Signals is formed. This system was first introduced at the battle of Trafalgar, when Lord Nelson transmitted that celebrated dispatch: "England expects that every man this day will do his duty."

The optical telegraph, especially in the form of the semaphore, was found to be too slow for the frequent and varied demands made upon it by the commercial *world, which fact* gave rise to very earnest efforts on the

part of many scientists and others to anticipate this growing necessity by the employment of electricity.

This brings us to the electric telegraph, which received its first impulse from Sommering in 1808, who devised an apparatus in Munich by which the decomposition of water with galvanic currents was utilized to give signals at a distance. It was, however, left for Gauss and Weber, in 1833, at Gottingen, to establish the first electric telegraph line (two wires) for the transmission of signals.

Steinheil, at Munich, in 1837, was the first to utilize the humidity of the earth to conduct the return current, and thus reduce the line connections between distant stations to one wire.

As might be expected, the advantages of the electric telegraph early forced its recognition as an important adjunct in military operations. The English were the first to avail themselves of the opportunity offered, and employed the field telegraph when suppressing insurrection in India.

Spain first used the field telegraph in the civil wars, 1833 to 1840 and 1846 to 1848, and its system is to-day, probably, in many respects, the most perfect in the world.

The electric telegraph eventually became the companion of the optical in military operations, but could not replace it, for there are many occasions when the building and maintenance of a telegraph line is impracticable, and only means of communication that embrace the methods of visual signaling can be employed.

Up to this time sun-flashing instruments had not been employed in optical telegraphy by Europeans. It was known, however, that the American Indians had long used sun flashes made with hand-mirrors as signals during inter-tribal wars and conflicts with the whites.

There is no question as to the great importance of the electric telegraph in warfare, and it cannot be superseded for its particular purpose. But all nations and all departments of labor, whether commercial, scientific, military, or naval, have recognized in all ages the need of some method of telegraphing between persons and places not connected by wire or other communicating media.

Confined to the use of the electric telegraph, there is left a very large margin of indispensable telegraphic work which only the optical telegraph can accomplish. The electric telegraph is cumbrous; it requires a fixed apparatus; it works only in single lines, and the entire apparatus can never be placed under the immediate control of the operators, who only occupy distant stations at either end of the line.

In military operations there are many occasions demanding the means of communication between different points where the employment of a telegraph line would be impossible, not to say impracticable, and it is needless to give further illustrations on a subject concerning which every member of the Army can readily appreciate the force of the above statement.

There is required a system by which any hill-top can be at once extemporized into a telegraph station, by which marching columns widely separated can quickly open communication and as quickly suspend work and resume the march, by which parties on opposite sides of a river, separated by a mile of water or ten or twenty miles of road, can engage in intelligent correspondence.

The Army in its maneuvers requires a connecting element that will insure immediate unity in all the ranks, and thus secure concerted action when exigencies most demand it.

The Navy and merchant marine demand methods of

communication which will provide in the simplest and most effective manner for celerity, certainty, and safety in all movements on the water.

Having in mind that three-fourths of the world's surface is water, and that this great expanse is for the most part alive with shipping, it is not difficult to realize that there is a pressing necessity for a telegraphic system that employs neither poles, wire, nor cables—a system simple, effective, and well adapted to either night or day work, on land or over the sea.

The chronology of the art of signaling develops the fact that the inventive genius of man has been excited for centuries in this direction. The manifold efforts that have been made to devise a plan of communicating between persons separated by the impracticability of any permanent connecting agent show the popular demand and the indispensable necessity for optical telegraphy. Perhaps this want is more apparent on the water, but on the land also there is a constant demand for itinerant telegraph stations.

As emergencies and circumstances cannot be anticipated or previously located, so fixed stations alone cannot serve the purpose of the signalist.

We have thus quickly scanned the historical events of this most interesting subject for a period of over 2,000 years. A system that has thus preserved its hold upon the necessities of mankind cannot be considered trivial.

Signaling in its broadest sense embraces not only the manifold forms of the optical telegraph, but the great electrical land and cable systems that unite continents and nations by mystic bands of steel and copper and overspread an entire country with a labyrinth of wiry messengers.

The art of signaling has revolutionized the world in less than 100 years. Its progress has made such strides in certain important directions that the public have really forgotten its humble origin, or that it had a history at all, because of a few brilliant discoveries that suddenly filled the world with amazement and seemed to mystify the surroundings of their inception.

Before we pass on to the consideration of modern appliances, especially those which concern the military, let us pause for a moment to review the character and significance of what are termed signals.

SIGNALS.

A signal is anything employed to excite attention and convey intelligence.

Any material thing which gives rise to a conception contrary to the impression which its appearance calls forth may be considerded a visual signal.

Through the agency of sight or hearing the means are thus afforded of transmitting intelligence, over greater or less distance, between points unconnected by any communicating media other than the atmosphere.

Primarily, signals are of two kinds—transient and permanent.

Transient: Those in which each symbol disappears after completion.

Example: Signals by motions, sounds, &c.

Permanent: Those in which each symbol remains in position after completion.

Example: A hoist of flags; a cryptogram or cypher dispatch; a symbol retained in a fixed position, &c.

Signals may be made in a great variety of way and with almost every conceivable form or kind of material.

There are many signs in common use in which themselves signify nothing, yet they have their meaning as

simple visual signals, that are known and made use of the world over.

Examples of visual signals are constantly met with on the streets of every city—the boot sign, to indicate shoemaker shops; the three gilt balls, for a pawnbroker's shop; the hat sign, &c.

A large variety of signals are in constant use by railroads, steamship lines, ferry boats, &c.

The underlying principle of *all systems* of signals is the joining together in any arrangements or combinations which are possible and expedient a certain number of arbitrary, simple signs, sounds, things, colors, or indications, in order to form other or different signs to any extent required.

A code of signals is a collection of symbols arranged and agreed upon, each symbol having a certain meaning assigned to it.

Codes are designated by the number of elements employed in making the signal or with reference to the different kind of symbols which appear in the record.

The formation of codes of signals depends upon the application of certain mathematical rules for permutations, combinations, and arrangements, by means of which, any number of signs or symbols being given, there can be determined the number and qualities of all the changes, combinations, and arrangements in which it is possible to place the given elements together.

The principles of signals are immutable and their application well-nigh endless. It is therefore useless to attempt novelty in this direction, as it is only in the ingenious application of principles well known for centuries and the development of mechanical devices to make those applications most available that there is opportunity for invention and discovery.

Considered as to the means of formation and exhibition, signals may be classified as

Optical,
Auricular, and
Electrical.

This division might be extended still further by including terms to embrace "Significations by touch," "Significations by taste," and "Significations by odors," but for the purpose of this discussion the former are sufficient.

Optical signals may comprise the following devices: Torches, rockets, flags (modified by color and form), lanterns, semaphores, heliotropes, heliographs, candle-bombs, puffs, flashes; in fact, any means, that may be employed to produce visual signals.

Auricular signals are those which address themselves to the sense of hearing, viz., the ringing of a bell, the tapping of a drum, the fog-horn, the steam-whistle, the notes of a bugle, the firing of a gun, &c.

Electrical signals are those which in their production involve the use of a special apparatus, known as batteries, wire, and electrical instruments.

It seems appropriate, in view of the peculiar conditions under which the signals of this class are formed, that they should be assigned to a distinct division, notwithstanding the fact that electrical signals may be either optical or auricular.

We may, so far as the compass of the instruments are concerned, divide all apparatus employed in transmitting visual signals into

Long-range, and
Short-range instruments.

In the former class the number and variety of devices are comparatively few, but pre-eminent stands the helio-

graph and the heliotrope, to which may be added, but of less range power. the electric light, the magnesium light, the calcium or oxy-hydrogen light, and candle-bombs thrown from specially constructed mortars.

Generally speaking, the range power of this class of signaling devices may be placed at from 25 to 100 miles.

In the latter class there will be found the following devices: Flags, torches, semaphores, homographic signals, composition fires, the Coston lights, signals by sound, motions, and colors.

In general terms, the range power of this class is from 1 to 20 miles.

The majority of all forms of signaling apparatus are restricted to short-range work.

Signaling over short range is necessarily more frequent, because invariably more certain than where extreme distances intervene between the stations, and, moreover, the means employed generally involve the simplest construction.

Long-range instruments are employed for both military and scientific purposes, but are better adapted to the latter class of work, for the important reason that it can more readily submit to the difficulties of long-range work and arrange finally to surmount them.

For scientific work in plane surveying and geodetical measurements long-range signaling is more or less imperative, demanding that the apparatus employed shall be effective at the greatest distances attainable, depending upon the clearness of the atmosphere and the elevation of the station.

It is reported, although it seems doubtful, that the flash of a 15-inch mirror has been seen with the aid of a powerful telescope at a distance accurately determined to be 192 miles.

Let us understand what it means to hold communica-

tion between disconnected points at such an extraordinary range.

Extensive geodetic operations prove that the earth is an oblate spheroid, the shortest diameter of which coincides with the terrestrial axis, and all of whose meridians are equal ellipses. It is therefore imperative, whenever great distances are measured, to consider the curvature of the earth's surface.

From any point of observation we find that there is a limit in all directions, beyond which we cannot see.

This boundary line to our extent of vision is formed by the apparent contact of earth and sky, and is called the horizon.

We have now discovered, because of the spherical contour of the earth's surface, that great distances are shortened to the sight.

While the curvature of the earth's surface is the principal cause of this limit to our vision, yet there are minor influences which supplement the main one and increase the difficulty, the most important of which is the condition of the atmosphere as to haze, fog, and dust.

By the presence of all or either of these elements the distance of the visible horizon is very much affected. As compared with a clear atmosphere, it may shorten the distance one-half or two-thirds.

We can now readily understand that the visible horizon is a variable quantity, dependent upon elevation above sea-level to overcome the effect of curvature, and upon diaphaneity to supersede the effect of haze, fog, and smoke.

Therefore, when the statement is made that signals have been transmitted the distance of 192 miles, not only is the range extraordinary and exceptional, but the conditions of atmosphere and topography, by means of which it was attained, were also exceptional.

To signal by sun flashes between two stations separated by the distance of 192 miles, where one of them is at sea-level, would require the instrument at the other to be mounted upon an elevation of over 21,000 feet, and that the atmosphere be entirely free from obstructing media.

To attain such an elevation for signaling purposes would be altogether impracticable under ordinary circumstances.

The necessity for such a great height can be very materially changed by providing that both signal stations have considerable altitude.

Thus, if both stations have an elevation of 10,500 feet, powerful lights thereon might become visible to each other over the distance above mentioned, but only under the most favorable conditions of atmosphere.

If one elevation is 9,000 feet and the other 12,000 feet, they might also become visible to each other.

The above statements depend upon the proposition that two places will become visible to each other when the sum of the visible horizon due to the elevation of each is less than the distance which separates them.

The rule formulated stands thus:

$$d = \sqrt{1\tfrac{1}{2} \times h},$$

where d = distance, in miles, and h = altitude, in feet.

To obtain the required height, when the distance becomes known by the use of the previous formula—

Square the distance in miles and divide by 1.5; or,

$$h = \frac{d^2}{1.5} = \text{altitude}.$$

Applications of the above formulæ determine that the curvature of the earth's surface, expressed numerically, is 6.99 inches per statute mile.

The distance of the visible horizon at an elevation of 100 feet is 12.7 miles; at 1,000 feet, 40.08 miles; and at a height of one mile, 94.50 miles.

To determine the lowest height of an object at which it may be seen from different distances at sea-level, we employ the following formula:

Log. distance in miles = the decimal .12155 + ½ Log. height in feet.

From the application of this formula we find that to make signals visible at a distance of 200 miles at sea-level would require that the high station should reach an altitude of about 2,400 feet.

This brief discussion of the question of long-distance signaling brings to view some of the insuperable difficulties necessarily attached to such work.

The requirements of a signal instrument for military purposes demand certainty of successful operations under ordinary conditions of weather, night or day, and such simplicity as will secure completeness of equipment and the best quality of construction.

Extreme distances between stations is not the great *desideratum* as in trigonometrical work, for during a campaign a commanding officer cannot halt at some point with his entire force for several days or weeks in order to ascertain how far he can send or receive a signal under the most favorable circumstances.

Surveying parties, engaged in geodetical work, can afford to take station on some lonely mountain-top or other lofty point, as they frequently do, build a comfortable shanty, set up their instruments, and wait for favorable weather—perhaps for ten days or a month.

Concerning this point, I will quote from the Annual Report of the U. S. Coast and Geodetic Survey for 1880:

"Observations upon 'short series' began on the 18th of August, and were continued at times when the more

distant points could be seen. They were completed on the 19th of October."

"I have mentioned that an interval of clear weather began on the 25th of September. Bull Run and Mount Marshall were ready and at once began showing helitropes by day and magnesium light at night, the latter by prearranged time-table."

"Between September 25th and October 1st ten out of eleven positions were observed at night; two positions on each for five nights."

"Neither Bull Run nor Mount Marshall were seen from October 1st to 20th, but by the 25th observations upon them were completed."

"Strecker did not begin to show until September 30th, and Granite Hill on the next night; but another season of smoke set in, lasting nearly three weeks, never giving us perfectly clear weather until just as we had wrung the observations out of the persistent haze, about the middle of November."

"By dint of close watching all observations were closed by the 3d of November."

"Wolf was ready, but through some mistake did not show at the right time on October 1st. We saw neither Wolf nor Granite Hill between October 1st and 20th."

Imagine the movement of a large body of troops at a critical moment to depend upon such chances as were here taken by the surveyor and civil engineer in order to send a message over a 60-mile range.

Would such a course of procedure be judicious on the part of the military commander?

Why should he wait a week or ten days, perhaps a month, to secure a few hours of sunshine in order to send the important dispatches, when by establishing intermediate stations the result could be obtained at once, no matter what the weather?

Long-range signaling will answer the requirements of the peculiar work of the surveyor, but not that of the soldier.

The surveyor with his heliotrope and calcium light, in the performance of peaceful duties, can quietly delay for favorable opportunities.

But the soldier, pressed by the emergencies of the moment, carrying the fate of a nation in his hands, responsible for human lives and public property, must conquer nature and make all things subserve the one purpose of success at once and at all hazards.

Heliography is the art of communicating between distant points, in which visual signals are obtained by reflecting the rays of the sun from a mirror or combination of mirrors in the required direction.

The heliograph or sun-flashing instrument is the most powerful of all signaling instruments when the sun shines and the atmosphere is free from haze or smoke.

When we realize how fitful the atmosphere is, and considering our own country how thick and heavy the air over the greater part of it is, it is not difficult to realize what the advantages of the heliograph are and the impracticability of long-range signaling for military purposes.

I do not mean to convey the idea that communication over great distances would not be valuable for the Army and very much to be desired; quite the contrary. There are times, perhaps, when the military can afford to build high towers for observation and signals, to occupy great elevations for the same purpose, and wait for opportunities favorable for long-distance communication, but the conditions under which this would be done are exceptional.

We are not in pursuit of the exception, but demand the rule that shall guide the military under the most

unfavorable conditions, and therefore secure a result that can be relied upon with certainty in an emergency.

What, then, shall be the equipment of a signal station? Surely not the heliograph alone. In my opinion, it should consist of flags, the heliograph, lanterns, the telescope, and marine glasses. Thus provided, and at short ranges, communication could always be maintained.

The optical telegraph for military purposes, meaning collectively all signaling instruments, will not prove successful while made to depend upon the caprices of nature.

In its proper sphere the optical telegraph is an assured success and indispensable to a complete military organization.

As I have said before, long-distance signaling is not the goal we are trying to win with the optical telegraph, because it is impracticable.

Let me quote some authorities on this point. In the Manual of Signals prepared and published by the late General Myer the following reference is made to the heliograph:

"The use of the heliograph is, however, when adopted as an auxiliary, and auxiliary only, to other and safer appliances for signaling, often valuable. The instrument should always form part of the equipment of large signal parties, and they should be carried with supply trains, that they may be accessible when their use *may be required.*"

"Under favorable conditions of position and atmosphere the range of the heliograph, in very clear days and favorable atmospheric conditions, is very great, but these conditions are not, however, always to be had. The instrument must be regarded as an auxiliary only to other military signaling apparatus."

"To be able to call by the sun flashes of the heliograph, the attention of fixed stations to flying or moving stations, wherever they may be, and this even with cloudy skies, with brief breaks only between the clouds, gives only short intervals in which sun flashes can be used."

From an extended report on exhaustive experiments made with certain forms of signaling apparatus at the School of Army Signaling in British India I made the following extract:

"There does not appear to be any decided advantage in having one signaling apparatus for far greater range power than that of the other articles in the equipment, for, should the conditions necessary for the working of such apparatus fail suddenly, communication must cease, as the other articles of inferior range power are not capable of being used at the same distance. For instance, if signaling is being carried on by heliostats, say, at a range of 20 miles, and the day becomes overcast and cloudy, signaling must cease entirely, as flags are invisible at that distance."

"Again, there is not any very great practical advantage in having a lamp that can be read 25 or 30 miles, as it is not probable that stations at night would be farther apart than they would be during the day."

"It is satisfactory and important, of course, to have in the signaling equipment apparatuses that can be used for ranges of 25 and 30 miles, as opportunities may arise when it would be invaluable to possess the power of communicating at those distances; but these occasions, under ordinary circumstances, would be so few that they should hardly be taken into consideration when estimating the relative values of the constituents of a signaling equipment adapted to all reasonable requirements of army signaling in the field."

"It appears prudent, therefore, to fix the ordinary limits of signal stations at the maximum distance due to the article of least range power, which is undoubtedly the flag. By this arrangement a total collapse of work can seldom occur."

"Taking the general features of the country in which military operations are likely to be maintained in India, it would be seldom when a greater range of 10 or 12 miles in a direct horizon could be obtained. In fact, as a rule, it is more difficult to get more than 4 or 5 miles of uninterrupted view in ground suitable for signaling. During the recent camp of exercise at Bangalore the maximum distance between stations was 4½ miles."

"We have seen from our experiments that flags are effective, under favorable conditions of atmosphere and with good telescopes, for 12 miles. It is plainly evident, then, that if signaling parties are equipped with flags, heliostats, and parabolic lamps they would be able, except under peculiarly unfavorable circumstances of fog, rain, &c., to establish the necessary communication between stations even 10 or 12 miles apart, and to carry on signaling at all hours of the day and night."

"It is important to remember that the conditions which are most unfavorable to flag signaling are those which do not affect the heliostat, and *vice versa*. A bright sunny day is necessary for the use of the heliostat, but such a day is generally unsuited for flag signaling, in consequence of the solar haze. On the other hand, a dark cloudy day is the best for flags, as the atmosphere is clearest on such occasions, but the absence of sun of course renders the heliostat useless."

"It appears, therefore, that mirrors and flags shall be considered complimentary apparatuses in signaling equipments, as, except under very unusual circumstances, conditions of weather must exist which are favorable either to one or the other."

"It is difficult to see, therefore, how signalers, under all ordinary circumstances, can ever fail in this country to establish communication with one another if they are provided with two apparatuses, one of which can be most advantageously used on bright sunny days and the other on dull cloudy days."

"If reliance be placed entirely on flags or exclusively on the heliostat, it is easy to understand that serious interruptions may frequently occur in signaling operations."

In Algeria the optical telegraph supplants the electric telegraph for both commercial and military purposes, and short-range stations are the rule, for under such circumstances both certainty and celerity are attained.

We have now considered the equipment of a signal station for military purposes and the range of communicating points.

Flags, mirrors, lanterns, telescopes, and marine glasses form the essential requisites.

In the new signaling instrument which I shall present to you this evening, called the Finley helio-telegraph, I will exhibit the only combination equipment for a signal station ever yet devised, providing the means for successful communication under all conditions of weather, night and day.

There are two forms of this apparatus, one for short-range work, known as the double-flash system, and the other for long-range work, called the single-flash system. The former may be quickly converted into a long-range instrument by simply changing the manner of representing the elements of the alphabetical code employed, which method is purely mechanical with the double-flash system.

Our next important question is, what are the duties of a signal corps, and what shall constitute their equipments?

A proper consideration of this subject would far exceed the limits of this paper; in fact, it would furnish material for a series of interesting and instructive lectures.

The subject naturally divides itself into the conditions subordinate to peace and those controlled by the peculiar necessities of war.

We are now more particularly interested in the former, yet must needs embrace the latter, for peace is but the preparation for war.

The question as to the requisite number of men to form an efficient organization depends upon the circumstances under which such a formation is possible with existing military conditions.

A single company, or perhaps a battalion of two companies, would meet the wants of the District National Guard.

In each State each regiment should have its signal company or battalion, devoted exclusively to the study and practice of military signaling in all its branches.

The company should be armed, equipped, and drilled as prescribed in cavalry tactics.

If the drill is dismounted, the company is formed as in the "School of the Company—dismounted."

A signal corps must be instructed in the means of self-defense, both collectively and as individuals.

Instruction in the use of signaling equipments may commence at once and alternate with drill in the manual of arms, and finally, after ordinary proficiency has been attained in the "School of the Company," the majority of the time must be devoted to regular and constant drill in the theory and practice of signaling apparatus.

Instruction in signaling will begin with memorizing the entire alphabet, numerals, abbreviations, &c., of the standard codes employed.

The code now authorized for the regular service of the United States is called the "Army and Navy Code for Visual Signaling," and is the same as the European Morse code of the electric telegraph.

The acquirement of the alphabet should be followed by what is termed "wand drill," which consists in using a stick of light wood about 18 inches in length and half an inch in diameter, as a substitute for the flag and staff used in the field.

The squad should at first read the alphabet signaled by the instructor, and afterwards they may be divided into couples to practice in the transmission of words, phrases, and finally messages to each other until each is able to read messages, of whatever character, signaled with the greatest rapidity of motion.

Practice should be had in repeating signals over a line of stations and in sending and receiving messages by signal cipher.

When the squad has become proficient in the "wand drill," it should be instructed in field practice with the complete equipment of a signal station.

Every article of the equipment must be thoroughly understood and quickly manipulated, and the men must be instructed to take proper position for day and night signals and make the appropriate use of every article as a whole or in detail.

Instruction should begin at ranges within the limits of the naked eye, afterwards at distances requiring the use of binocular glasses, and finally a powerful telescope.

Too much practice cannot be had in acquiring the intelligent use and care of the telescope and marine glasses for both day and night work.

A good telescope and the proper means of employing it are absolutely indispensable to the complete equipment of a signal station.

The duties of a signal corps in time of war are frequently performed under peculiar hardships. There is no rest from the first movement of the army until it returns again to permanent quarters.

Scattered widely over extents of country on lonely stations; hurried singly or by twos from point to point miles distant; kept near the enemy on the advance that they may watch his movements; kept near him on the retreat that they may report his advance; stationed beyond the picket-lines; sent out with the scouts and skirmishers to reconnoiter; placed with batteries to report their shots; obliged to hold their station under fire in battle under penalty of disgrace; exposed by day and night in heat and cold and rain; serving on horseback and on foot, on ships and on shore, at mast-heads, in trees, on mountain tops—they see all the hardships of war with few of its pleasures.

A day of successful battle, which brings some rest to others, is to them only an episode in the labors which precede and follow it.

Up to this time I have made but occasional reference to the employment of the electric telegraph as part of the signal equipment of an army.

Its use is imperative and growing in importance. As a result of this necessity, many modifications were demanded and made to adopt the electric telegraph to the needs of the military.

Consequently, the most elaborate preparations have been made among European armies for the construction and employment of what is called the field telegraph in the various forms of portable and permanent lines.

At the battle of Fredericksburg the Signal Corps brought into operation for the first time in the service of the United States a telegraph station working upon

the field of actual battle, exposed to the same fire as the general and his staff.

At 8.30 a. m., September 13, 1882, at the very moment of the victory at Tel-el-Kebir, the commanding general, Sir Garnet Wolsely, sent a dispatch by the aid of his optical and field telegraph lines to Her Majesty the Queen, announcing the good news, and, at 9.15 a. m., forty-five minutes later, received a reply from the Queen upon the battle-field.

This is the first instance in history that an English general telegraphed from the battle-field the announcement of victory.

In June, 1861, the optical telegraph was employed by the Federal forces in Hampton Roads to report the range of shells fired from the Rip Raps upon the enemy's battery at Sewell's point.

The Confederate forces during the battles of July 18th and 21st, 1861, employed field signals with the most promising success.

This list of references to the wonderful importance and success of field signals might be greatly increased if I had the time to rehearse them.

Every civilized nation recognizes the necessity of an organized field telegraph for strategic and tactical purposes of modern warfare.

As every other branch of the army intended for military action marches to the battle-field prepared by uninterrupted drills in time of peace, the same must be accomplished in the case of the optical field-telegraph systems if success is desired.

All arms of the service are being increased and perfected, and the same care and energy must be bestowed upon both forms of the military telegraph.

The organization of the optical field telegraph differs

somewhat in different countries, controlled more or less by the peculiar character of their military formations, topography of the country, and the conditions of the atmosphere.

In mountainous countries the development is contracted, while in more level regions greater diversity prevails.

Spain, enclosed by mountain chains, uses the heliograph and a special mountain telegraph, in conjunction with the field system employed in other countries.

The topographical conditions of Austria require not only permanent and semi-permanent lines, but also field and mountain telegraph systems, including the optical and acoustic telegraph.

In British India especial attention is given to the use and development of the optical telegraph for night and day work, and the troops of all regiments are carefully instructed therein.

The organization of a field-telegraph train on the American system consists, for an army corps, of one (1) battery wagon, four (4) wire wagons, and four (4) lance trucks.

A train is divided into four sections, consisting of one (1) wire wagon and one (1) lance truck.

A train is commanded by a captain, and each section by a lieutenant.

The battery wagon is fitted up as an office, with all the necessary batteries, instruments, stationery, &c.

Each wire wagon is provided with from 10 to 12 miles of wire, a portion of which is insulated, and a reel for paying out and winding up the wire. Each lance truck will carry from 300 to 500 lances, each 17 feet in length, supplied with insulators and insulator spikes.

The force required to work the train is 5 commissioned officers and 174 enlisted men.

The capacity of the train is to erect 50 miles or more of portable telegraph line.

That form of organization and equipment most suitable for militia purposes may be called the section train, consisting of one (1) battery wagon, one (1) wire wagon, and one (1) lance truck, in charge of a lieutenant and 45 men.

Such an organization could readily be maintained in each State and in the District of Columbia, which in time of war would form the nucleus for a complete and powerful formation.

The following countries have formed signal corps: France, Austria, Germany, Russia, England, Spain, Belgium, Holland, Italy, Sweden, Portugal, Switzerland, Turkey, Roumania, Servia, Greece, Norway, British India, Denmark, Algeria, Japan, and China.

The following States in this country have taken steps to form signal corps, and have appointed signal officers on the general staff: California, Connecticut, Massachusetts (corps formed and manual of instruction published), New Jersey, New York, North Carolina, Ohio, Rhode Island, and to the last may now be added, I am pleased to learn, the District of Columbia.

Every State and Territory in the Union should organize a signal corps in connection with its National Guard, and thorough instruction required in the use of the apparatus employed in the optical and field telegraph systems.

The immense service rendered by the use of optical signals during the campaigns in Afghanistan and Zululand will never be forgotten, and few there are who will deny that the heliograph has been of inestimable value to the British cause and has saved thousands of brave soldiers from disaster.

The famous defeat of the French at Waterloo would

scarcely have been so complete had Napoleon, by a signal communication with Grouchy, received timely information of the fact that this general had been outwitted by Blucher, and that it was the latter, not the former, who was arriving on the battle-field in the afternoon.

There is scarcely an officer who has seen service who cannot call to mind scores of instances in which it might have contributed to the success of an expedition or engagement if he and his fellow-officers had even possessed so much skill in optical signaling as may be acquired in a few days' practice.

The subject of field and optical telegraphs will for years give room, as a branch of military science, for study and improvement, and no arm of the service will prove more fascinating in its pursuit or more productive of important results.

History is crowded with examples where, with the aid of the optical and field telegraph, the most brilliant victories might have been secured.

LECTURE NO. 12.

BY MAJOR GEORGE B. DAVIS, JUDGE ADVOCATE, U. S. ARMY.

Military law; relations of military to civil authority; martial law; courts-martial.

It shall be my purpose in this paper to treat of what, for want of a better name, may be called the disciplinary features of the problem which has been proposed for discussion by General Ordway. To that end I shall endeavor, first, to show what the term means—what discipline is; next, how it is to be brought about or impressed upon a military organization; lastly, how it is to be maintained, with some incidental allusion to the part played by courts-martial in securing discipline in a command in garrison or in the field.

There are few words in our language the meaning of which is so little understood as the one which I shall attempt to define. I regret to say, also, that the want of a clear conception of its meaning often indicates a corresponding want of discipline.

The word "discipline" has been variously defined, no two of the usual definitions having quite the same point of view, though all concur in giving the term somewhat too strict and harsh a meaning. Neglecting these, the word may be defined as a state of subordination or obedience due to, and the result of, physical or mental training, or both. Indeed, the discipline that prevails in Stewart's store or the Pennsylvania railroad rests upon the same foundation and is obtained by the same methods that would be resorted to in a battery of light

artillery. More than this, the usual penalty—a dishonorable discharge—is much the same in either case, the only difference being in the severity of the extreme punishment and in the fact that in one case the punishment is inflicted in strict accordance with law, while in the other it depends to a greater or less extent upon the will of a single responsible person. Colonel Vial, in his Art of War, defines it in this way: "To put an army into action and to give movement to the various parts which make up its mechanism, it is necessary that each should obey a single rule, a single will, the orders of a single man. It is necessary that those orders should be transmitted through a regularly defined channel to the last unit of the organization, and they should be executed uniformly everywhere. It is necessary, in a word, that inferiors should implicitly, exactly, and uniformly obey their superiors, and *this obedience constitutes military discipline* by securing the prompt, accurate, and complete execution of all military duties." I have heard it defined, and very correctly, as the "orderly sequence of events in a military command," and I think that if I were to say that prompt, intelligent, and willing obedience to orders and regulations constitutes military discipline I should not be very far from the mark. "A nation may be in a condition of social disorder, or even of anarchy, but it is still a nation; an army without discipline is not an army, but a dangerous mob."

Having defined the word, let us see how the quality itself is to be acquired or impressed upon an organization. There is a common notion that the terms "drill" and "discipline" are synonymous. I suppose that this is due to the fact that, until well into this century, the works which we now call tactics—or, more correctly, drill regulations—were invariably known as "systems of discipline." However that may be, it is unnecessary

for me to say that the terms are not synonymous. A well-drilled command may be quite otherwise than well disciplined, while, on the other hand, a well-disciplined command may lack somewhat of proficiency or finish in drill, or may, by reason of other employment, at times be badly drilled. Drill is one, but only one, of the ways or means of obtaining discipline, and, however important, cannot alone be relied on to secure the desired result. Discipline being in itself the correct and faithful performance of duty, it is obvious that to obtain it we must first secure prompt and accurate obedience, and to *this* end drill is a powerful auxiliary. The man who learns to face, wheel, march, and halt promptly at word of command is learning at the same time to obey other orders with promptness and accuracy. In the present state of tactical science perhaps the most useful effect of the elementary and formal parts of the drill book—the facings and dressings, the manual of arms, and the setting-up exercises—will be found in this particular contribution to discipline. Drill, too, is the trade of the military man, and so soon as the recruit becomes proficient in it, emerging from the condition of apprenticeship, the soldierly spirit begins to develop itself in the command, and should be steadily and constantly appealed to, for, when developed under proper direction, this constitues a kind of military public opinion, one of the strongest and most potent of the known agencies in building up and maintaining discipline. Example is another powerful factor in securing discipline. If the officers and non-commissioned officers of a command are seen and known to perform their duties with zeal and intelligence and with scrupulous accuracy and fidelity, the privates will soon be found conforming to the wholesome example of their superiors.

A command of intelligent Americans will not have been organized many days before the first symptoms of order and routine will begin to show themselves—in other words, before the military machine begins to work. Like other complicated pieces of mechanism, it will need some oil and constant and careful, but not too obvious and ostentatious, supervision. The great object to be attained is to get the machine to run itself—to obtain a kind of military perpetual motion—and to secure this end no effort should be spared, no endeavor remitted; and I am sure you will find just here a field for the exercise not only of much zeal and energy, but of great patience and forbearance as well.

Some things must be found out at any cost, others had better not be known; some must be seen, and others had better remain unseen; and it is in the exercise of a strong, judicious common sense at this early stage of the development of discipline that the key to ultimate and enduring success will be found.

Methods once established and learned should be adhered to and not changed, except for the most cogent reasons. They should, therefore, be framed with care, deliberation, and foresight. A good rule, based upon common sense, will be found in the long run to work better than a succession of brilliant experiments, however original and striking they may at first sight appear. The tendency to organize and reorganize should be repressed or kept within the narrowest limits and exercised only when change becomes imperative. Of all things, avoid false starts. Do not act without forethought. Do not put advice in the form of orders. Make as few orders as possible, for it is the number of orders *obeyed*, not the number given, that makes a well-disciplined command. When you give them, give them clearly, quietly, and to the proper persons, and see that

every one is obeyed. In minor matters accept substantial obedience. If one man errs, or a few men, deal with him or them; do not make an order for ninety-nine based on the frailties of one, or punish or restrict the many for the faults of the few. Remember that discipline is based upon hope and fear, and so compliment and encourage at least as much as you criticise and condemn.

The President, as the constitutional commander-in-chief, has the power to use the land and naval forces of the United States, and, in certain contingencies, the militia of the several States, in suppressing insurrection and repelling invasion. For this purpose the State lines and State authorities disappear and the territory of the United States becomes a unit. For our purpose it matters not whether the force so embodied and used is composed of regulars, volunteers, or militia, and, assuming the case of a concentration to resist an invasion, we will discuss some of the more essential incidents of the movement.

In the first place, if the President, or his representative, in a proper case sets a military force in motion, no authority, State, municipal, or otherwise, can resist or impede its progress, and armed opposition, no matter from what quarter it proceeds, can and must be met and overcome by force. The size of the command does not signify, and the rule applies with equal force to a corporal's guard or an army corps.

The moving command is an independent unit, self-supporting and self-regulating and in no way dependent upon or controlled by the local law. The Articles of War make it the duty of the commanding officer to maintain order and discipline, and to refrain from doing injury during the march or journey, and he is clothed with power adequate to his responsibility. If an indi-

vidual voluntarily separates himself from his command, and thus ceases to obey or disobeys the orders of the President, he becomes a mere unit of population; his privilege ceases; he is amenable to the local law, and, like any other citizen, he may be punished for its violation. So, too, if an entire organization moves without orders, or in disobedience of orders, no privilege accompanies it. It is a mere mob, dangerous in proportion to its size and the completeness and efficiency of its organization.

Having reached the frontier, or its vicinity, the command enters the field of military operations, the question of martial law arises, and it becomes necessary to understand precisely what the term means—what change it makes in the ordinary relation.

In this respect England and the United States are placed at an apparent disadvantage, when compared with the continental states of Europe, in which the Roman law prevails. In this latter group of states the attempt is made to cover the fields of social disorder, beginning with a mere difficulty of enforcing or executing the laws, due to political excitement, and ending with the entire subversion of the civil law, as is the case when a portion of the territory of the state is in the full possession of a rebellious faction, as was the case with us during the civil war. No such attempt, however, has been made in England or the United States, and the want of legislation constitutes an element of uncertainty whenever the aid of the military arm is called to the support of the civil authority. The disadvantage, however, is less serious than it appears to be at first sight and the situation has some compensations. In England and the United States the greatest freedom of movement and of action is recognized to belong to the individual; restrictions upon that freedom are not

lightly tolerated, and, as peace and order are with us the rule, and war and disorder the exception, it is clear that we are in the long run the gainers as the result of our adhesion to the more liberal rule.

The disordered condition of affairs to which I have alluded is called in France the "state of siege," and is recognized as partial or total, depending upon the kind and amount of obstruction to the regular and ordinary operation of the civil law. It may be proclaimed by the sovereign, and in some cases by the higher local authorities, and the effect of such proclamation is to transfer to the proper military authority certain powers which the civil authority is no longer able or willing to exercise. While it confers great and complete powers upon the military arm, it imposes at the same time great responsibilities. The chief importance of this legislation to the members of the military establishment is to absolve an officer or soldier who follows the law strictly from personal responsibility to the state or to the individual for acts done or omitted to be done in the performance of duty. This state of siege is, in fact, our martial law. When the civil authority is prevented by the military occupation of an enemy or by domestic insurrection from exercising its appropriate functions, the general commanding becomes charged with the protection of life and property and the maintenance of order within the occupied or disturbed district. This state of affairs is the obvious result of necessity; the alternative is anarchy, since the civil law makes no provision for its own utter and entire suspension. The will of the commanding general is law. His orders are supreme, and his power absolute. He is not subject to the local law and cannot be reached by the processes of courts. His actions are regulated by the laws of war and the imperious facts in the particular case or exigency which

confronts him, and this is martial law. The Constitution of the United States makes no other provision for this state of affairs than to recognize the occasions upon which the privilege of the writ *habeas corpus* may be suspended, but this goes no further than to admit that cases may arise in which arrests may be made without warrant and to say that in such cases the ordinary remedy of an arrested person shall not prevail. In other words, the constitutional provision is negative, not positive, in its provision. It gives no authority to arrest; it does not cover a period of disorder, and it gives no one an immunity from arrest or prosecution for acts done in obedience to orders.

The practice has been in England and the United States to allow the forces of law and order, both military and civil, to prevail as best they could, and then, when the invader had been ejected or the insurrection suppressed, to pass what are called "acts of indemnity" for acts done in the preservation of order. These acts deal with the question in a method directly opposite to that provided by the "state of siege" legislation of the continental powers. The latter, looking to the future, promise immunity to him who strictly obeys orders and follows the law; the former, looking to the past, profess to give immunity for acts done in obedience to the urgent necessity of the case. These acts of indemnity have usually taken one of two forms. First, they deprive the courts, criminal and civil, of jurisdiction over offenses committed or acts done between the limiting dates of the insurrection or occupation; second, they allow civil suits to be brought, but undertake either to defend them or to satisfy any judgments rendered against officers for acts done or omitted to be done in pursuance of military authority or military necessity. The latter method has been the one resorted to by the

United States and by several of the States on the occasions of domestic violence.

Not many cases are likely to arise, however, where the civil authority is entirely suspended on account of insurrection or invasion, and I will pass to a more difficult field, that in which military force is called out to aid the civil authority in the suppression of riots and disorderly assemblages. Here the difficult question is, not as to where or to what extent military force may be used, but what after immunity can an officer or enlisted man expect when he has faithfully performed his duty upon an occasion of this kind. There is no legislation upon this subject on the part of the United States or on that of any of the several States, so far as I am informed. The case seems at first sight anomalous, but the reason for the absence of legislation is plain. If you are called out by proper authority and placed under the orders of the sheriff or marshal, and if he, after exhausting the statutory menaces and common law methods of preserving the peace of the Commonwealth, finds it necessary to order you to fire, and if, in obedience to his request, you wound or kill individuals and destroy or injure property, your conduct can be reviewed and your legal responsibility fixed in just one way, by the verdict of a jury in a criminal prosecution; and here comes in the element of uncertainty that no statute under our Constitution and form of government can remove—your personal safety depends on the action of a jury, and you do not know what the verdict of that jury will be. The verdict will vindicate or condemn you, will deprive you of liberty or property, possibly of life, for doing your simple legal duty as a citizen and a soldier; and still, as you perform that duty, you have only the uncertain satisfaction of knowing that you may or may not suffer for

it, and that whether you are to suffer or not will depend upon the judgment of the jury in a case in which, while the prosecution has a plain and easily provable case, it may, and probably will, be extremely difficult for you to make out a sufficient defense.

I can only say, on the other side, that prosecutions of military persons for acts done in preservation of the peace are extremely rare in this country, though less so in England. It must also be remembered that when it becomes necessary to make use of military force to suppress riot or to prevent disorder the officers and men represent not only the sovereign people, but the overwhelming public opinion of the disturbed locality. The order to act and the justification for acting come from precisely the same source, and you may feel sure that the community which looks to you for protection in the emergency of social disorder may be confidently depended upon not only to justify your acts in its defense, but to accord to you the credit which your gallant endeavors will merit.

I will now briefly discuss the place of military law and courts-martial in the general scheme of military discipline. I have shown that martial law, in a strict sense, is not law at all, but rather a state of affairs due to the failure of the civil authority to assert itself and to enforce respect for personal and property rights. Military law, on the other hand, is strictly statutory, both as to persons and offenses, and is very strictly construed by the courts of the United States whenever cases involving any of its provisions come before them. The citizen upon entering the military service parts with none of his rights, immunities, or duties as a citizen, save such as are implied in the constraint upon his actions, which he imposes upon himself by his oath of enlistment. He simply adds new

duties and obligations to those already existing, and it is to this field of rights and duties that military law applies. No persons are governed by it except those who voluntarily enter the military service, and it applies to them only so long as they continue in the military service, and when that service legally ends its obligation ceases. It is embodied in the Articles of War, a body of statutes one hundred and twenty-eight in number, which we adopted from the English articles under which the colonial contingents that served with the British forces in the French and Indian wars had acted, and with which they were entirely familiar. During the century and a half that they have been in force they have undergone so few changes that we must infer that they have substantially served their purpose. They cover a great variety of subjects, including the enlistment and discharge of soldiers, their conduct in garrison and in the field, to a limited extent their relations with the civil authority, and the constitution and jurisdiction of courts-martial. They also define a large number of crimes or offenses; some of these, like desertion, mutiny, and neglect of duty, are purely military; others are purely civil offenses, over which courts-martial are given jurisdiction in special cases. As to some offenses there is a double responsibility to both the military and civil authority, but this is not peculiar to the Articles of War, and extends to other Federal enactments as well. While each one of the one hundred and twenty-eight articles covers its particular field and serves a necessary purpose, an army could exist and military discipline could be carried on if all but one—that requiring obedience to orders and giving power to punish disobedience of orders—were swept away.

The purpose of the Articles of War to define the rules of subordination and to enable discipline to be *maintained* brings me to the subject of courts-martial.

A court-martial is not, as is sometimes supposed, a part of the judicial system of the United States. It is rather an instrument placed in the hands of a commanding officer to aid him in the maintenance of discipline. It is obvious that in enforcing obedience commanding officer must have power to punish; but it is also obvious that there should be very definite limitations placed upon the exercise of this power, and that the kind and amount of punishment in any particular case should not depend entirely and exclusively upon him. From the nature of the case, also, military punishment must follow quickly upon the commission of the offense, and cannot suffer the delays that are necessarily incident to the administration of general criminal justice. All of these conditions are fulfilled in the statutes or articles creating the several military courts. Charges are preferred against an alleged offender, the proper commander convenes a court-martial suitable to the offense and the offender, the case is tried, a verdict or finding is reached, and a punishment recommended. Here the duty of the court ends. The proceedings are forwarded to the convening officer, who reviews and confirms or disapproves them. He may direct the sentence to be carried into effect or he may mitigate or remit it. For good reason he may set it aside, but he cannot increase it or change its character. The procedure of these courts is simple, following closely the general criminal practice and the rules of evidence that prevail in the district and circuit courts of the United States. Their jurisdiction is exactly defined by law and can in no case be exceeded either as to persons or cases. They are of two classes, general and minor courts, the classification being based upon their jurisdiction and power to punish.

LECTURE NO. 13.

BY BRIGADIER GENERAL ALBERT ORDWAY, D. C. MILITIA.

Street Riots.

The lectures which have been delivered to you in the regular course of instruction for this year were instituted for the purpose of instructing you in the practical duties of officers in field service, and assumed that you had been called into service by the United States to meet apprehended invasion or insurrection. There is, however, another kind of service that you are more likely to be called upon to perform, and that is to aid and support civil authority in the enforcement of law or the suppression of disorder. As the performance of such duty imposes greater individual responsibility, and involves the necessity of knowledge of the limitations placed on military power while acting in subordination to civil authority, as well as the study of means of applying military force and tactics in modes entirely different from those used in the field, it is proper to make it the subject of a separate and additional lecture.

It is the proud boast of a free people, and is the actual fact in our own country and in England, that military authority is at all times subordinate to civil authority. The reason for this may be found in the fact that it is civil authority that creates the military force; civil authority that taxes the people to support it; and that civil authority creates and maintains it for its own protection. The same reasons that make it necessary for man to hold in subjection the forces of

nature that he summons to his assistance—like steam and electricity—make it essential that the civil authority should hold in subjection the military force that it creates, as otherwise, in either case, the force may rend or destroy the power that called it into existence.

The general enunciation of the constitutional principle of the subordination of military power is often made, but seldom explained. I take it to mean that the military power, being subordinate, can neither initiate nor determine any matter; that military power cannot declare or initiate war, nor make peace; that civil authority alone can direct military force when it may fight, and that civil authority by declaring peace can remand the military force to its normal condition. So far as the individuals of which the military force is composed, it means that by taking on the additional character of a soldier they do not divest themselves of any of their responsibilities or duties as citizens; it means that a soldier can be arrested by civil authority for the violation of criminal law, and is only exempt from arrest by civil process under the same general principle that exempts civic officers.

There are occasions, however, on which this fundamental principle of subordination of military power is either modified or suspended. It is modified when civil authority calls military force to its aid, to the extent that civil authority then limits itself to instructing the military force what it desires to have done, but does not interfere with the manner of doing it. It is suspended when civil authority declares martial law, and thereby voluntarily surrenders for a limited time every function and power it possesses to the control of the military authority.

It being evidently essential that all military officers should study the laws and precedents governing the re-

lations between military and civil authority, and more especially necessary that officers of the volunteer militia should understand the special relations that exist when military force is called upon by civil authority to aid in the enforcement of law or the preservation of peace, I will briefly review the subject.

CALLING OUT THE MILITIA.

The militia may be called out for service within its own State by such civic officers of the State as may be authorized by its laws to do so. It may be called into the service of the United States, for service in its own or any other State, by the President, in such cases as the law authorizes him to do so.

The subject of this lecture does not require a detailed consideration of the questions involved in the laws authorizing the President to call the militia of the States into the service of the United States. The numerous statutes governing the action of the President may be summarized into three general principles:

1st. That he may call out the militia of any or all the States in case of threatened invasion.

2d. That he may call out the militia of any or all the States in case of a rebellion against the authority of of the United States, or to enforce the laws of the United States within any State.

3rd. That in case any State shall apply to the President for assistance to enforce its own laws, or, as expressed in the Constitution, for protection "against domestic violence," he may call out the militia of any State or States except that of the State making the application.

So far as the regular troops of the United States are concerned, they cannot act in aid of the civil authorities *of a State* except by the order of the President. It is

carefully stated in the Digest of Opinions of the Judge Advocate General that "In a case of civil disturbance in violation of the laws of a State a military commander cannot volunteer to intervene with his command without incurring a personal responsibility for his acts. In the absence of the requisite orders he may not even march or array his command for the purpose of exerting a moral effect or an effect *in terrorem;* such a demonstration, indeed, could only compromise the authority of the United States while insulting the sovereignty of the State."

Within the States their respective laws provide the mode by which and, with more or less detail, prescribe the occasions on which, the civil authorities may call on the militia for aid. In some of the States only the commander-in-chief, the governor, can call out the militia; in others, various county, city, or town authorities, civil magistrates, sheriffs, and other civil officers may do so; in others, the local military commander may call out the troops if, in his own judgment, the danger appears imminent.

On these points it is only necessary for officers to familiarize themselves with the laws of their respective States, so that they may know when called upon that the call is made by a legally authorized civic officer and in a legal manner. The military officer called upon cannot question the reason or the necessity for the call; he has no alternative except to respond to it. If the officer called upon by the civil authority orders the troops of his command to parade in obedience to such call, the subordinate officers and the soldiers of his command have nothing whatever to do with or question whether the call was made by a legally authorized civic officer in a legal manner. The order to them is purely a military order, and must be obeyed without question.

The law of the District of Columbia is short and explicit. You will find it in section 45 of the Militia Law, as follows:

"That when there is in the District of Columbia a tumult, riot, mob, or a body of men acting together by force with attempt to commit a felony, or to offer violence to persons or property, or by force and violence to break and resist the laws, or when such tumult, riot, or mob is threatened, it shall be lawful for the Commissioners of the District of Columbia, or for the United States Marshal for the District of Columbia, to call on the commander-in-chief to aid them in suppressing such violence and enforcing the laws; the commander-in-chief shall thereupon order out so much and such portion of the militia as he may deem necessary to suppress the same, and no member thereof who shall be thus ordered out by proper authority for any such duty shall be liable to civil or criminal prosecution for any act done in the discharge of his military duty."

CIVIC CONTROL OF MILITIA CALLED OUT.

It is important for officers to study the law and the precedents governing their relations with, and the extent or limits of their subordination to, the civil authorities, after being legally called out and having reported to them for duty.

When called into the service of the United States, the third case I have previously specified is the only one which specially concerns us in discussing the subject of this lecture, and that only concerns us so far as to know what relations the troops of the United States would hold, that is, what subordination they would be under, to the civil authorities of the State which had invoked their aid.

In the railroad riots of 1877 the troops sent by the United States to West Virginia, Maryland, and Pennsylvania were directed to report to and act under the

orders of the governors of those States. This direct subordination to local civil authority was strongly objected to by General Hancock, who suggested to the Secretary of War "that when State governments declare their inability to suppress domestic insurrection through the military channels, and call upon the President of the United States to intervene, he should not do it through the civil powers of the States, which have already failed, but by the intervention of the Federal authorities by military force, himself exercising the control." In these views the digest of opinions of the Judge Advocate General coincide by the statement that: "A military force employed according to article IV, sec. 4, of the Constitution, is to remain under the direction and orders of the President, as commander-in-chief, and his military subordinates; it cannot be placed under the direct orders or exclusive disposition of the governor of the State."

Probably the true solution of the matter is that United States troops, or militia called into the service of the United States, on such occasions should hold the same relation to the supreme civil authorities of the State in which they are operating that in other cases the State troops would hold to the sheriff, or other civil authority of their own State, that had invoked their aid—that is, they should report to the supreme civil authority for information and instruction in the purposes to be accomplished; should co-operate in every way in accomplishing those purposes, but should not and could not recognize any suggestion as orders to govern their military dispositions.

When called out by the State the laws of some of the States very clearly prescribe the manner in which the civic and military officers shall respectively act when brought into conjunction. In many of the States,

however, their laws are silent on this point. Where there are specific laws, every officer should become thoroughly familiar with them; where there are no specific laws, every officer should become thoroughly familiar with common law and precedent. In either case officers should not wait for the time of action to inquire what they should or may do; every officer should, by careful thought and study of supposed situations, know what he would do when those situations become realities.

The body of troops responding in obedience to the call of the civil authorities is not a *posse comitatus*, of which each individual is called out individually by the civic officers, and in which each individual is subject to the orders of the civic officer. The body of troops, so far as the civic officer is concerned, is a unit, and that unit is represented and controlled by its commanding officer. The civic officer can have no control or relations with the body of troops except through their commanding officer. The only question, therefore, is to what extent the civic officer may direct or control the commanding officer of the military force that he has invoked to aid him. It may be safely accepted as a rule established both by reason and precedent, that the power or control of the civic officer ceases when he has communicated to the commanding officer of the military force the purpose that he desires to be accomplished, and that he cannot resume control until he distinctly dismisses or remands the military force from further duty. The military officer should, therefore, on reporting to the civic officer in response to his call or in obedience to orders of higher military authority, demand of the civic officer that he give him in writing the purpose or object he requires to be accomplished, and if the civic officer refuses or is unable to give it in

writing, that he require him to state it verbally in presence of a proper number of witnesses. From that moment the power of the civic officer ceases, and it is for the military officer alone to determine how he will accomplish the duty required of him.

General Napier expressed the matter in these words: "*How* to use this force in his (the soldier's) trade; but it is not his trade to decide *when* it should be used against his countrymen. He may play the part of a druggist, but that of the physician appertains to the magistrate."

The regulations of Massachusetts cover the whole question most thoroughly, and may be safely adopted by any officer called upon to perform duty in a State in which there are no specific laws or regulations to govern his actions:

"Par. 2298. The civil officer is not authorized to interfere in any way with the formation or details of the force, the military officer being held responsible for the success of the operations to be undertaken; and it is for the latter, and for him alone, to judge in what manner the troops shall effect the object which the civil officer has indicated, and to direct the force in the execution of the service in which it is engaged."

"Par. 2299. While the instructions of the civil officers are given in general terms to accomplish a particular purpose, and the mode and means are within the discretion of the military commander, the latter, to prevent misunderstanding, should request to have his instructions reduced to writing."

FIRING UPON A MOB.

Notwithstanding the fact that it is discretionary with a military commander how he will dispose of and use his force to accomplish the purpose for which the civil authority has invoked his aid, the act of causing or directing the firing on people is sufficiently serious to be worthy of special consideration.

It is a general rule of law that it is the right of any citizen, at any time, to use force to prevent the perpetration of felony, or in endeavoring to arrest a felonious culprit. The amount of force he may legally use is measured by the amount of resistance he meets, and if homicide becomes necessary to accomplish the purpose, law justifies the killing.

A riot may be defined as an unlawful assemblage of persons who use violence to accomplish their purposes. This constitutes a felony, and therefore the killing of any participant in the riot is clearly justifiable if the riot cannot be suppressed by less violent means.

It is also a principle of law that "homicide, or the taking of human life, is justifiable when necessarily committed by public officers and those acting under their command or in their aid and assistance in overcoming resistance to the execution of legal process or the discharge of any other legal duty." One eminent jurist goes so far as to make the broad statement that "if officers of the law, when engaged in the preservation of the peace, find it necessary to take life, such homicide is justifiable." It is further clearly established that homicide committed in dispersing an unlawful assembly is justifiable. By an unlawful assembly is meant one which meets for a purpose which, if executed, would make them rioters. Though such an assembly may not have committed any overt act or violence that would constitute felony, yet if the civil authorities deem it necessary or proper to disperse the assembly, and call upon the military authorities to assist them in doing so, the law will regard as justifiable homicide the necessary killing of any participant in the assembly.

The question whether a person killed was a participant is settled by the rule of law that "those present at the commission of a riotous felony are principals,"

and is put beyond all question if the proper officer has commanded the assembly to disperse before the firing was ordered. It is for this reason that in many States the law requires that the civic officer shall order the assembly to disperse before he turns them over to the care of the military officer; if he omits to do so, it is well for the military officer to do so before proceeding to extreme measures. It is not necessary to "read the riot act" or law; a notice or command to disperse is all that is requisite, and in emergencies even this formality may be dispensed with.

Verbal notices or orders can be heard by only a few in the front ranks of a mob, and I would suggest that it might be well to adopt a universal signal, which would be universally understood as giving notice to a mob to disperse before opening fire on it. Sounding the "long roll" on the drums would make an excellent signal for this purpose.

From what I have quoted of law and legal decisions, it seems safe to assert, as a legal proposition, that if a military commander in the exercise of his discretionary power as to the means of carrying out the instructions of the civic officer deems it proper to order his troops to fire upon either a riotous or unlawful assembly, and should thereby cause the death of either participants or so-called spectators, he could not be held answerable for such result.

While the taking of human life does not involve legal responsibility under the conditions I have cited, it always entails moral responsibility, and no military officer should give the fatal order until it is clearly evident that he cannot otherwise carry out the demands and instructions of the civic authorities, or it is made necessary for the security of the troops under his command. When it does become necessary to fire on a mob, it is merciful

to make the fire short, relentless, and effective. Above all, every soldier must remember that it should make no difference to him whether the mob is composed of millionaires or paupers, capitalists or laborers, aliens or Americans, enemies or friends and neighbors, or even if the riotous assemblage has been caused by well-founded grievances. Our duty is both simple and clear—to maintain and enforce law without consideration of the class of people that may be resisting it, and without regard to our personal views of the injustice of the law or the justice of the grievances that may arise under it.

SEIZURE AND USE OF PRIVATE PROPERTY.

In operations against rioters it often becomes necessary to convert private property to public use, or to seize and destroy it; as, for instance, to convert the nearest available means to use in making barricades; to destroy a private building occupied by rioters; or to seize food for the sustenance of the troops. When the danger is immediate, or the necessity so urgent that no delay is possible, the military commander should not hesitate. While he may render himself liable to civil action, there are so many legal decisions to sustain him that he need have no fear of the results, provided he has not exercised his discretionary power in a corrupt or malicious manner. The law that protects the military commander in taking human life will surely protect him in taking private property. "The Government, not the officer, is responsible for the property taken for public use; and a subsequent ratification of the act by the Government is equivalent to prior authority to do it."

GIVING AND OBEYING ORDERS.

It is prescribed by the Articles of War, and is a military axiom, that a subordinate *must* obey all *lawful* or-

ders of a superior. It is equally true that obedience to an *illegal* order of a superior will not protect an inferior against military or civil punishment for results that may follow. It is, therefore, important that you should carefully study this distinction, as it is applicable to all phases of military duty as well as the one we are now considering.

There have been many trials, both military and civic, in England and in this country involving the question of the extent of the right of a subordinate to judge of the legality or illegality of the order of a superior. Extracts from some of the decisions of the highest courts and from the opinions of eminent jurists may make the point clear to you. One decision says: "The order must expressly and clearly show on its face, or in the body thereof, its illegality; and this must appear at once to a common mind on hearing it read or given; nor has the inferior a right to inquire of the superior the object and purpose he has in view." The reason for this is clearly stated in another decision as follows: "The first duty of a soldier is obedience, and without this there can be neither discipline nor efficiency in an army. If every subordinate officer and soldier were at liberty to question the legality of the orders of the commander and obey them or not as they may consider them valid or invalid, the camp would be turned into a debating school, where the precious moments for action would be lost in wordy conflicts between the advocates of conflicting opinions." Therefore, as clearly stated in another decision, any officer or soldier may safely act as ordered by superior authority without fear of the consequences, "except in plain case of excess of authority, where at first blush it is apparent and palpable to the commonest understanding that the order is illegal."

It being thus evident that if any one can be held re-

sponsible for acts done it must be to the superior military authority that gives the order for doing them, it becomes interesting to study the precedents from which rules may be drawn by which the superior may safely govern his action; and as a subaltern officer may at any time be placed in a position which he will be the superior military authority present, and therefore invested with the responsibility of giving orders, it is important that officers of all grades should study the questions we are now discussing.

I have stated that a subordinate will not be held responsible for executing the lawful orders of his superior. It is also equally true that a superior will not be held responsible for any of the *unauthorized* acts of his subordinates. The liability of a superior officer was broadly stated by Lord Mansfield to be, that "a public officer who acts without authority, or exceeds his authority, is liable * * * for the act done without or in excess of his authority." The measure of an officer's authority may be accepted as definitely settled by the results of numerous trials in England, beginning as far back as the time of Charles II, and by many decisions of our own courts.

There are two kinds of duties that a military officer may be called upon to perform—ministerial duties and discretionary duties. Ministerial duty is simply definite duty; duty imposed by law; duty in respect to which nothing is left to discretion; duty which allows the officer no power to judge of the matter to be done. Discretionary duty has been defined by the courts to be, "when applied to public functionaries, a power or right conferred upon them by law of acting officially in certain circumstances, according to the dictates of their own judgment and conscience, uncontrolled by the judgment or conscience of another." It has been clearly settled

by numerous decisions that an officer in the discharge of discretionary duties "is not responsible to any one receiving an injury from such act, unless the officer act maliciously and willfully wrong." It has also been settled by judicial decision that the duties of an officer in suppressing a mob are discretionary duties—that is, that while the law requires him to discharge the duty, it invests him with discretionary authority in doing it. While it is true, as said by the Supreme Court of the United States, that there is no case in which a public officer acting from a sense of duty, in a matter where he is required to exercise discretion, is not *liable* to an action for error of judgment, it is equally true, as stated by the same court, that "a public officer, invested with certain discretionary power, never has been and never should be made answerable for any injury when acting within the scope of his authority and not influenced by malice, corruption, or cruelty." This decision practically covers the whole point and makes it unnecessary to quote from numerous other decisions bearing on it. The consensus of all decisions is that when an officer is placed in a position that requires him to exercise discretionary power his acts "are to be presumed legal till shown by others to be unjustifiable," and that he cannot be held answerable for the effect of any act done by him through mistake of law or error of judgment.

RESPONSIBILITIES AND LIABILITIES.

It may seem somewhat hazardous to differ from commonly accepted theories, but my convictions are so strong that I do not hesitate to express them, and I believe that what I have quoted from accepted principles of law and from legal decisions sustain my conclusions.

I have seen it stated by one writer that, "if assailed by force too strong for its ordinary processes, the law

calls force to its defense, but from its exalted throne it judges both its assailants and its defenders." I cannot agree with this writer. I believe that when law calls upon force to defend it, that law will protect those it calls to its defense so long as the means employed by force and the results of employing those means are kept within the pre-established precepts laid down by law itself.

The impression is too general and has been too long uncontradicted, that a military officer puts himself in great jeopardy of civil or criminal punishment on the one hand or court-martial on the other in the discharge of duties imposed upon him by law. I cannot assent to this doctrine—in fact, I venture to contradict it. To admit it would paralyze the efficiency of the military force and make all their efforts weak and vacillating. The theory and tendency of all modern legislation is directly the reverse, and there are few, if any, judicial decisions to support it.

The laws of Massachusetts, Connecticut, New York, Wisconsin, Alabama, the District of Columbia, and several of the other States distinctly provide that a military officer shall not be held liable to civil or criminal punishment for acts done in the discharge of his duty in rendering aid to the civil authorities. Undoubtedly the laws of all the States will make similar provisions whenever they are revised. In those States in which no specific laws are as yet enacted the common law and legal precedent afford ample security to all officers in the discharge of their duties, and especially no subordinate officer or soldier need give himself the slightest concern in obeying the lawful orders of his superior. Every citizen in the ordinary routine of life is liable to arrest and trial on civil and criminal charges of which he is wholly innocent. We see this exemplified every day in the courts. What I affirm is that a military

officer is subject to no greater hazard or jeopardy in the performance of his duty than any citizen is subject to in the discharge of the ordinary duties of life.

CONCLUSIONS.

To impress upon your minds the principal points I have endeavored to illustrate in the preceding remarks, I will briefly summarize the following as the most important for you to consider and remember in determining your conduct when called into service by local civil authority:

First. That a military officer upon whom demand is made by a civic officer for aid is obliged to respond to it if the demand is made in a legal manner by a civic officer authorized by law to make it.

Second. That subordinate officers and soldiers receiving orders from their superiors to assemble for the purpose of aiding the civil authorities cannot question the legality of the call made upon their superior, but must obey the order as a military order.

Third. That the military officer called upon by the civil authority or ordered by superior military authority, having assembled his force and reported it to the designated civic officer, should require from that officer specific information, in writing if possible, of the duty required of him. Having received that information he should, from that moment, assume supreme control of the situation, and in no event allow the civic officer to control his dispositions or permit him to give any orders or directions to the force under his command.

Fourth. That superior or commanding officers will not be held responsible for any act done or order given by them, or the results following from any such act or order, provided they act according to their best judgment on what they suppose to be the actual facts and

are not governed by malice or corruption; nor will they be held responsible for any unauthorized act of their subordinates.

Fifth. Subordinates will not be held responsible for any act done by them under the lawful orders of their superiors. They may kill, burn, or destroy with absolute impunity if their superiors lawfully order them to do so. In such case the superior will be held responsible for the legality of his orders and the results of them. If a subordinate does an act not authorized or directed by his superior, or under an unlawful order of his superior, he may be held responsible for its results.

Sixth. Remember, however, that it is better to err on the side of yielding subordination to civil authority rather than insist on the military rights I have indicated, if the occasion should seem to require it, and you would not thereby jeopardize the safety of your command.

MILITARY VIEW OF RIOTS.

Having considered the legal aspect of riots and the relations that exist between the military and civil authorities in suppressing them, it remains for us to consider the equally important military questions involved in the methods of applying military force to this purpose.

It is fully as important in this country to prepare for internal disorder as for external danger; as much reason to provide for suppressing riots as to provide for coast defense.

Our people seem to be wholly blind to the lessons of the past, the dangers of the present, or the possibilities of the future.

In 1877 an insignificant trouble at the small town of Martinsburg, in West Virginia, suddenly developed

proportions that overshadowed the whole country. In less than forty-eight hours fifty thousand miles of railway were inoperative and sovereign States were appealing in the most abject manner to the Federal Government for protection. Millions of dollars' worth of property were destroyed, millions of dollars' worth of human labor lost, and the fabric of lawful order received a severe blow. If all of this was done in 1877 without premeditation, and without a definite purpose in view, for which previous organization under competent leaders had been made, it is fearful to contemplate what might occur in the future. Since that time our country has been overrun by hundreds of thousands of the most criminal and ignorant classes of Europe, who can neither assimilate with our people nor appreciate or understand the meaning of our institutions or the force of our laws—men who know no law but force and can appreciate no punishment less than death. Following in the wake of this horde of immigrants have come the professional agitators, who may be called the pimps of the professional leaders, who have come to live on the tolls they levy on these ignorant people while they organize and train them for their own diabolical purposes. These professional leaders are by no means to be despised. They are generally men who have had a military education, have held rank and position in various armies, have had experience in war, but who through their own vices have been dismissed from all honorable service and ostracised from respectable society, and though having been reared to despise those who labor, make dupes of them that they may live upon their contributions and the possibilities of the future. If you ever have occasion to meet these men you will find that they are no tyros in the art of war and will be a match for the best intelligence we can bring

against them. The hand of these people is not shown in ordinary affairs, but we know enough of them, of the organizations they control, of their purposes, and of their means of accomplishing these purposes, to know that when the time comes that they consider favorable the riots of 1877 will be remembered as trifling affairs compared with what will then confront us.

Any thoughtful person, and especially a military observer, must realize the fact that riots in the future will be more frequent and more formidable than in the past, inasmuch as when honest but misguided men may be brought to the sudden frenzy of resisting lawful government the opportunity will be seized by the professional rioter and anarchist to accomplish their own purposes. This view is amply sustained by many facts known to the police authorities, and is clearly indicated in the brief cablegrams contained in our newspapers describing recent riots in Europe.

A few weeks ago the cable account of a riot in Bradford, England, said that the rioters not only barricaded the streets on their front, but that they also barricaded all the side streets on their flanks, and were only routed by a vigorous attack on their rear. It was certainly no novice who conducted that defense.

The cablegrams of the past few days, describing riots that occurred in various cities in Europe on the first of May, though meagre in detail, contain enough to justify the same conclusion.

The fearful slaughter of the brave policemen of Chicago in Haymarket square was only one feature of a prearranged plan that failed simply by lack of coöperation, and the single dynamite bomb that caused their death was only one of many that had been prepared for far more serious work. Are we to hope or expect that such an attempt will never be made again, or that when

made the anarchists will not profit by their former failure, while we pay not the slightest attention to the lessons that the attempt should have taught us.

Riots originate from various causes. They have been caused by religion, politics, race prejudices, and in later years by labor agitators. They may be either spontaneous or incited. Nearly all the riots of former years have been spontaneous; those of the future we may expect to be premeditated and incited. From whatever cause they may originate, or whatever class of people may compose them, all riots result in forcibly resisting the enforcement of law, and therefore we can make no distinction in our treatment of them, no matter what our own religion, politics, or condition of life may be.

In considering the elements of society most likely to be involved in riotous assemblages, distinction should be made between labor organizations, socialists, and anarchists. All of these terms seem foreign to our institutions, but nevertheless they are transplanted to our midst, and we must learn their purposes and understand their meaning.

Labor organizations are formed with the praiseworthy purpose of ameliorating or improving the condition of laborers by peaceable and legal organizations. The good intentions of such organizations are one thing, the results that may follow are another. The power in the hands of these organizations is tremendous. It would be necessary to assert human infallibility to assume that this power will never be exercised to promote the fortunes or purposes of unscrupulous leaders who may get control of it. We know that it has been done on some occasions in the past and we know that it will be more likely to occur in the future in proportion to the introduction of foreign labor and foreign ideas. This is indicated by the fact that the labor organizations, after fail-

ing in any other way to accomplish a declared purpose, such as increase of wages, fewer hours of work, the restoration of a discharged laborer, resort to a "strike" to accomplish it. Unfortunately "strikes" generally result in the employment and exercise of force. It forces the unwilling to cease labor and forcibly prevents the willing from assuming labor. It says to the contented laborer, who has his pleasant home that shelters his happy family partly paid for, and who is cheerfully laboring to discharge the balance of his payments, you *shall not* work; and it says to the skilled laborer, who may have expended the last dollar of his savings in endeavoring to prolong the life of an invalid wife and in the care of his helpless children, your wife may die, your children may starve, and you may become a convict for resisting us, but you *shall not* work. These are not labor organizations or methods that any free-born American laborer can tolerate or sympathize with. They are cruel and tyrannical powers enforcing the worst form of human slavery by the exercise of brutal force. Force begets force. If the workingmen are led by unscrupulous men to adopt the methods of anarchy they should know that the elements of anarchy will seek to coöperate with them, and that they would thereby be involved in the fate that must always finally come to anarchy—ruin or despotism. It has, however, been greatly to the credit of American labor, and a hopeful sign for the future, that they are seldom found in the ranks of a mob, no matter for what grievances they may be endeavoring to procure redress. It was stated by one officer, in reference to the riots of 1877 in Pennsylvania, "that not fifteen per cent. of the railroad employés were participants or sympathizers." It was stated still more strongly by another officer that the mobs were "composed of roughs, tramps, unknown men, from where no one knew, and a few

striking railroad men." These facts should teach the lawless element among the workingmen that if they listen to the specious arguments of the anarchist they will not have the support of their intelligent fellow-workmen, and should also convince the soldier that any mob he may be called upon to face which has been organized under the plea of wrongs of labor to be redressed, instead of being composed of workingmen is in reality composed of at least eighty-five per cent. of roughs, tramps, thieves, convicts, and anarchists, whom he need have no compunctions in effectually eradicating.

The socialists should not be confounded with the anarchists. The socialist is generally a mild sort of being, who indulges in vague theories of the proper construction of human society. He is a dreamer, and no more to be feared than any other harmless lunatic, except so far as he may lend aid and countenance to putting his theories into active opposition to legally established government.

The anarchist is the natural product of socialistic theories practically applied. He believes or asserts a belief in a condition of society in which there shall be no law or no supreme power, and in which every individual shall do whatever he pleases with perfect impunity. Even hell is assumed to have a ruler, and he is generally pictured as not only a most powerful, but a most adroit ruler. If one could imagine hell without a ruler he might form a slight conception of what this earth would be if anarchy should prevail. The anarchist is a professional rioter, and he brings to his profession all of the arts of diplomacy, the skill of science, and the knowledge of experience. If you are ever brought in contact with a mob, let us hope that the anarchists will constitute the front ranks, if not the entire body of it. What otherwise might be a duty will then *become* a pleasure.

To solve any problem requires a statement of the definite propositions on which the problem is based. The military problems arising from street riots do not admit of preconceived definite propositions, for the reason that every riot will differ in cause, composition, and purpose, and each of these points must be considered in determining how to deal with a riot. We might fill volumes in assuming almost every condition and combination of conditions that we could conceive, and then, in fact, an officer would probably be confronted by a condition wholly different from any he had studied.

CHARACTER OF RIOTS.

Primarily, riots may be divided into two types:

One type is a spontaneous riotous assemblage, confined to a single locality or limited district in a city, lacking organization, and without definite purposes or recognized leadership. Such riots may be quickly suppressed and easily dispersed by inferior military force; and, if the military force is under a proper and competent commander, with little or no bloodshed. Fortunately nearly all the riots that have occurred in our country have been of this type.

The other type is a premeditated and general uprising, covering, or liable to cover, the whole territory of a city; with definite purposes and definite plans for accomplishing those purposes, and with its forces carefully organized and skillfully led. If such a riot should assume the offensive, the methods of defeating it would be quickly perceptible to any military mind; but if it should assume the defensive, barricade strategic points in various parts of a large city, and occupy houses on the streets leading to its strongholds with riflemen and dynamite bomb throwers, it would task an overwhelming force and great military genius to subdue it. The *nearest* approach in our country to this type of riots

have been the "draft riots" in New York city in 1863, and the "railroad riots" in 1877, which extended over many States. Fortunately, in both cases, the uprisings being either unpremeditated or prematurely begun, lacked organization and leadership.

The local riot may lead to the general riot, or riots may occur which combine in all possible proportions the various elements of both. It being, therefore, evidently impossible to prescribe definite methods for dealing with all riots, I will limit myself to the consideration of a few general principles covering the two types of riot I have indicated, simply as suggestive for application according to the combination of conditions and circumstances that may confront you.

THE ASSEMBLY.

If the public peace is being disturbed or threatened to an extent that makes it apparently possible that the civil authorities may finally be obliged to call on the military authorities for aid, a prudent local commander will quietly, and if possible secretly, keep a sufficient force constantly on duty in the armories of his command to guard them against sudden surprise and to protect the assembly of his troops if call should be made.

If the call for troops is made, this armory guard should at once be deployed a sufficient distance from the building to protect it on every side and prevent persons from approaching the building, except recognized members of the command reporting for duty. If a crowd of idle or curious citizens collects, this small guard would be sufficient; but if it is a hostile or threatening crowd, the guard should be reinforced as rapidly as men reach the armory and are uniformed and armed, until it becomes sufficiently strong to hold the surroundings of the armory up to the time that the command

has fully assembled, made all of its preparations, and is ready to move out.

In case the "call to arms" is unexpected and unprovided for, the police authorities should immediately send to every armory in the city detachments of police to protect them, as above described, until a sufficient number of soldiers have arrived and can be posted to relieve them.

In all cities there should be two methods of calling out the troops: one, by verbal orders sent to the men individually through the non-commissioned officers of their respective squads; the other, by a prescribed signal on the fire-alarm bells, to be used in cases of sudden emergency.

Uniforms, arms, and equipments should always be kept in the armories; otherwise individual men in uniform, attempting to reach their armories, would be waylaid and forcibly detained or killed by the rioters. Fatigue or field dress should invariably be assumed for street-riot duty, and the commanding officer at the armory will indicate whether blankets, overcoats, haversacks, canteens, knapsacks, or which of them are to be worn.

Every man suddenly summoned for duty should take with him from home sufficient bread and meat for one day's rations, in order to provide against the contingency of lack of time for the commissary officers to provide for feeding them immediately.

After the troops have been assembled in the armory they should be minutely inspected to see that every man is thoroughly equipped and every rifle in perfect order. Ball cartridges should then be issued to the men. The commanding officer should also outline to his officers the nature of the duty he has been ordered to perform and the manner in which he intends to ex-

ecute his orders, and should give to his men some general instructions and cautions. A capable officer and such number of men as circumstances may seem to require should then be detailed to remain at the armory.

If a guard has been maintained at a distance from the armory, as indicated, there will be no difficulty in moving the command out of the armory and forming it on the street; but if such a guard has not been maintained, or has been forced by a hostile crowd that shows a disposition to dispute the egress of the troops from the armory, there are many expedients which will suggest themselves to any officer by which he may force the passage. Do not temporize with such a crowd or seek to evade it by some back-alley egress. Confront the danger at once, as determined action and a severe lesson to the would-be rioters at this juncture may prevent much further trouble.

STREET TACTICS.

You have been accustomed to apply the word "tactics" to your drill book. This application of the word is erroneous, and it is therefore necessary for me to say that on this branch of my subject I shall use the word in its proper and broader significance, in which it may be defined as "the art of handling troops in the presence of an enemy," or the "disposition and movements of troops for attack and defense when in the presence of the enemy."

The maneuvering of troops in the streets of a city requires some special formations not prescribed in the drill books for maneuvering troops in the open field. Many systems have been devised and advocated, but all of them are too complicated. It should be borne in mind that the troops most likely to be used in suppressing riots will be "raw troops," unaccustomed to

scenes of dangerous excitement or to the sensation of being fired on. To attempt complicated maneuvers with such troops would result in confusion and consequent disaster. There should be only one formation used in street-riot duty, and that the most simple possible, both in its ployment and deployment.

The system of street drill devised by the late General W. H. Brownell, of the New York National Guard, has heretofore been the most generally adopted and accepted system. His system may be briefly outlined as having two principal formations. His first formation is a hollow square, with the front and rear subdivisions extending the width of the street, from building line to building line; the flank subdivisions in column of fours, and with sharpshooters in the line of file-closers inside the square. His second formation is simply a column of divisions with the division fronts extended or contracted so as to exactly cover the width of the street from building line to building line, and with sharpshooters on the flanks in the intervals between divisions. The methods of changing from one of those formations to the other, or of assuming them either from column of fours or from column of companies, and of extending or contracting the front, are minutely prescribed. The formation of a hollow square he describes as "simply precautionary for defense while marching to the scene of trouble, and prepared for any emergency." The other formation, an ordinary column of divisions, he calls the "assaulting or fighting formation." I have already stated my objection to having more than one formation for street-riot duty; but if we should admit that two or more formations, with all the complicated maneuvers arising from them, might be desirable, it is impossible to conceive on what reasons the application of the two

formations above described have been based. It seems to me that their application should have been reversed, and the hollow square made the fighting formation, as it is unquestionably the stronger formation, either for defense or offense. A radical defect in both formations is that in one the sharpshooters are inside the square, and in the other inside the flanks of the column—in both cases about as inappropriate as would be a skirmish line in rear of a line of battle. The system further prescribes that, being in column of fighting order and pressing the mob back closely, on reaching intervening streets the subdivisions of the leading division will vigorously execute the "right and left turn" respectively, and thereby sweep away and detach from the mob its front ranks and drive them down the side streets. Even theoretically this seems rather a weak maneuver, and I would not hesitate to predict that if attempted would result in disaster, and that the subdivisions making the "turn," with their flanks exposed to the pressure of the mob, would be those swept away.

Another system of street drill has been published by Major E. G. Sprowl, of the California National Guard. Like Brownell's tactics, it shows infinite care and practical knowledge in the most minute details of drill; in fact, it is most elaborate in details. It provides for "street-marching order," "double-column order," "street-corner order," "street-fighting order," and "building-attack order."

These and all similar systems of street drill are excellent studies for professional soldiers in the methods of attack and defense of towns and villages, and veteran troops could probably be maneuvered by them under severe fire, but they are too complicated to use in handling militia the first time it is brought under fire or into the presence of danger.

I do not claim any originality for the street drill I have prescribed for you, and it may have even more faults than I have pointed out in other systems. I am, however, somewhat confirmed in my views by the fact that while they were in manuscript, and had not been made public, the U. S. Army Tactical Board adopted almost identically the same system.

In our street drill I have prescribed but one formation, and that is a modification of Brownell's hollow square formation, and have made a different application of it. The modifications consist in giving the square whatever front the number of men in the leading company might happen to give it, except that in no case should the front exceed the width between curb-lines of the street, and in placing the sharpshooters oustide the square instead of inside. My reasons for these modifications are: that it makes no difference whether the front of the square reaches the building lines or not, for it may be extended from the flanks of the leading and rear subdivisions to the building lines by sharpshooters, who would then be available and in position for effective work; that the front of the square should not extend beyond the curb-lines for the reason that trees, lamp-posts, projecting steps, areas, fences, and other obstructions would often make it impracticable to march the flanks of the square in column of fours on the sidewalk; that the sharpshooters, being placed outside the square, would naturally occupy the sidewalk, and what would prove obstructions to a column of fours would serve as a cover for them, and they could more readily cover the windows on the side of the street opposite to them or reinforce the sharpshooters in front. The formation I have described obviates all maneuvering or change of formation; it can be used first, last, and all the time; it is the best formation in

which to march through riotous districts, as it is ready for instant work; it is the best for fighting, as it is equally effective for attack or defense, and is equally ready on every side for either. Intersecting streets or open parks, on one or both sides, are easily provided for by wheeling the flanking columns of the square into line; and above all, the formation having been once taken, there is no liability of the troops being thrown into confusion by attempts to execute complicated maneuvers.

Troops on riot duty should move through the streets without music or colors. If the riot is local, and a considerable distance from the armory, the troops should be moved by the least frequented streets and in column of fours, so that they will not interrupt public traffic or create excitement. If, however, the riot is a general uprising, the troops should be moved upon whatever streets military policy may indicate, and in the formation of hollow square, as described.

Sharpshooters should be considered as detached from their companies, and should be placed under the immediate command of an inspector of rifle practice, who will receive his instructions and orders direct from the commanding officer.

The essential quality in troops that are to be used against a mob is fire discipline, and in this quality the troops of the National Guard are sadly lacking. You should make it the most important feature of your instruction and drills. Firing must be completely under the control of the commanding officer, both as to its beginning and ceasing. A single shot prematurely fired is an error; a single life unnecessarily taken is a crime. With the exception of the sharpshooters, the fire should be by volleys and delivered by ranks. As the men are trained at much longer range than would be used in the

streets, the fire should invariably be delivered kneeling, to avoid the tendency to fire too high. It is unnecessary to say that blank cartridges and harmless volleys over the heads of a mob should be absolutely prohibited.

The sharpshooters should fire individually and only as directed by their commanding officer. The use of sharpshooters and their desultory firing makes it still more essential that the body of the troops should be held under stringent fire discipline.

Having considered the modes of forming and moving troops, we may now properly consider the modes of dispersing or attacking a mob when finally brought in contact with it.

If the mob is in an open street, without barricades, and does not occupy the houses on either side of it, while its offensive strength is reduced to its limited front its defensive strength must be measured by the depth of the surging mass of impassioned rioters constituting the body of it. The appearance of a strong military force on its front may induce the leaders of a mob to listen and heed the demands to disperse, or to endeavor to escape from the threatening Gatling guns and levelled rifles confronting them. The dense crowd in the rear, hearing and seeing nothing of what is going on in front, are heedless of danger and pressing forward, so that it is impossible for the front to give way, whether desirous or forced to do so. Even after a deadly volley is fired by the troops, the rear of the mob is still unawed and presses forward.

The troops should in no case be brought into immediate contact with such a mob. Bayonets and "butts to the front" would be of no avail, as in such hand-to-hand fighting the troops would quickly be overwhelmed by mere weight of numbers. The offensive and defensive power of the inferior number of troops rests in

discipline and in the bullet; two hundred troops in an ordinary street would hold the defensive against a mob of any size as effectually as two thousand. The commanding officer should therefore halt his troops a suitable distance from the mob, determine what number may be necessary to hold the mob in check, and divide the balance into two detachments to move down the streets parallel to the one held by the mob on each of its flanks, with instructions to come in on the flanks and, if possible, the rear of the mob by alternate side streets, so as not to fire on each other. The flanking and rear detachments should begin their work first, and, when they have disintegrated the mass of the mob so that its front may be able to give way, a determined advance or a single volley on its front may quickly terminate the work, and with much less loss of life than would otherwise be entailed. An example of the value and effectiveness of this method of attacking a mob occurred in the draft riots in New York city in 1863. On the second day of the riots an immense mob moved down Broadway with the avowed purpose of attacking police headquarters. Less than two hundred policemen were available to meet the mob, and they were placed under the command of Sergeant Carpenter, with the significant order to "make no arrests," and were sent out as a "forlorn hope." The fight is thus described: "They moved down Bleecker street towards Broadway. As they turned into the latter street, only a block and a half away, they saw the mob, which filled the street as far as the eye could reach, moving tumultuously forward. * * * The less than two hundred policemen, compact and firm, now halted, while Carpenter detached two companies of fifty each up the parallel streets to the right and left as far as Fourth street. Coming down this street from both directions, they were to strike the

mob on both flanks at the same time he charged them in front. * * * The mob, just before so confident and bold, quailed in terror and would have broke and fled at once but for the mass behind, which kept bearing down on them. This, however, soon gave away *before the side attacks, and the panic that followed* * * * It was a great victory and decisive of all future contests."

STREET STRATEGY.

In the sense in which used in connection with the operations of war, strategy has but a limited application to the problems arising from street-riot duty, and none whatever in what I have designated as local riots. In general riots the same principles that govern the movements and disposition of large armies in the field may be applied, with such modifications as the contracted field of operations would naturally suggest.

If we consider strategy to be "the general disposition and movement of troops with the view of compassing the enemy's overthrow under conditions that will secure the most decisive results," we may accept the orders issued by General St. Arnaud to his troops during the riots in Paris in 1851 as the best instruction we have on the subject: "Concentrate the troops in masses, care for them, feed them well, keep them from contact with the people, withdraw the too feeble posts, dispense with patrols, allow barricades to be constructed; then, the moment for action being carefully chosen, attack unexpectedly with compact force and crush all resistance."

In the few cases of general riots we have had in this country the common error has been using small bodies of troops in attempts to quell disorder at many scattered points. Detached combats without decisive or material results exhaust the troops and encourage the *rioters*. During the first days of the "draft riots" in

New York city in 1863 the small available force of military and police were completely exhausted by being sent in small detachments to every point from which rioting or disorder was reported. A crowd dispersed, a few men killed, the troops withdrawn, and the rioters immediately reoccupying the ground were the only results gained.

In all large cities the strategic points in the city should be determined, studied, and known beforehand, and in case of a general uprising the troops should be concentrated at these points as rapidly as they can be assembled, instead of being scattered throughout the city wherever rioting may happen to be going on at the moment. By strategic points I mean those points by which, or from which, the various districts of the city can be completely isolated from each other. These points having been thus occupied, a simultaneous movement, with each part supporting the others, and an overwhelming attack on the most important stronghold of the rioters would probably crush the uprising completely or make further operations simply similar to the pursuit and breaking up of a defeated and demoralized army.

It is a common error to regard a street as a defile, and to attempt to apply the rules of war relative to the attack and passage of defiles. In determining the selection of strategic points and the movements of troops in a general uprising, a city should rather be regarded as a broken or mountainous country, with innumerable defiles, which make parallel, flanking, and rear movements possible and easy.

In occupying the strategic points selected it is well to keep the mass of the troops concealed as much as practicable until the time for action arrives, so that their sudden appearance may be an overwhelming surprise.

It is a commonly accepted theory that armories in cities should be constructed as fortresses. If the armories were located at strategic points, this theory might be correct; but as they are generally located by the accident of convenience or value of ground, I can perceive no practical or military reason in such theory. The armories of militia are simply places of meeting, and repositories for arms and equipments.

Rioters have no incentive or desire to attack or besiege armories; their plunder lies elsewhere. They might attempt to prevent the egress of troops assembled in an armory, but in such event a fortress would be of no more account than an ordinary building.

The only attempt that rioters would make on an armory would be secretly and suddenly, with a view of obtaining or destroying the arms in it before the troops assembled. Against such an attempt a fortress guarded by a janitor would be no more secure than any ordinary building. If the militia are in the armory, with the arms in their hands, the rioters will not attack the armory with a view of obtaining the arms. If the militia have secured their arms and left the armory, it is of no more use to the rioters than any other unoccupied building. If the rioters were defeated in the open streets and could reach these deserted fortress armories before the troops returned to them, the tables might be turned and necessitate the troops besieging them.

The militia are supposed to act on the offensive and not to shut themselves up in armories to act on the defensive. Their offensive operations should not be weakened by the thought that they have convenient and safe places within which to retire if they are defeated. This point is well illustrated by the disastrous results that followed from the militia allowing themselves to be *shut up in* the "round-house" at Pittsburg during the

riots of 1877. In case of defeat they should be withdrawn to public parks and open spaces, in which they can be concentrated, easily defend themselves on all sides, and be in position to resume the offensive at the first favorable opportunity.

An armory should more properly be regarded simply as a secure place to keep arms, and that security can best be obtained by heavy iron gratings to doors and windows, and by keeping the arms in a special room with heavy brick walls, floor, and ceiling, and double steel doors, constructed with a view of resisting the efforts of rioters sufficiently long to allow the alarm to be given, instead of keeping the arms in ornamental and insecure racks in the open drill-hall.

In all riots the commanding officer of the military force should keep himself constantly advised of the movements and purposes of the rioters by means of detectives, or scouts in civilian's clothing.

It may be assumed that the civil authorities before calling for military aid will have provided for the protection of the gas and electric light works, water works, fire department houses, telegraph and telephone lines; will have closed all liquor saloons, and will have closed and guarded all gun stores. It should be the first care of the military commander to ascertain if these precautions have been taken, and if not already provided for, he should suggest that the civil force he relieves be immediately disposed for that purpose; or, if the civil authorities are inert and inefficient, should immediately assign the necessary military force to do it.

When military force has been called to aid the civil authorities, the troops should never assume the functions of the police unless the civil authority is completely paralyzed. The functions of the police and the military are entirely distinct, and should be kept so. As a

rule, it may be said that the troops should on no occasion act as auxiliary to the police, while the police should constantly act as auxiliary to the military for the purpose of making arrests or taking into custody rioters that have been seized by or surrendered to the military.

ATTACK OF BARRICADES.

If the rioters instead of being in an open street, have been forced into or taken a purely defensive attitude, and entrench themselves by means of barricades, a direct attack on such barricades should never be attempted until all other methods of capturing them have been tried and failed, or are evidently useless to attempt.

A thorough reconnoissance of the surroundings of the barricaded position should be made to determine if it is possible to attack it on the rear or flanks. It is difficult to conceive of any position in which this would not be possible; for, if the situation demanded such extreme methods, houses could be destroyed to open a direct access to the flank of the position. In some cases the position might be such that, if the number of troops were sufficient to warrant it, the whole entrenched position could be cut off and isolated while the work of suppressing the riot in other portions of the city proceeded.

If, however, all other methods fail and a direct attack on a barricade becomes necessary, artillery is indispensable, and the rapid fire or revolving cannon, capable of an unremitting fire of small shells, are best adapted to the work. The artillery should be run as far to the front as practicable and supported by the infantry designated to make the assault, who in the meantime should be kept as much under cover as possible. The artillerymen should be protected from the fire of rioters occupying overlooking houses by epaulements impro-

vised from the nearest available material. Sharpshooters of the infantry, acting as skirmishers, should prevent any return fire from the barricade and any attempt by its defenders to repair breaches made in it. Suitable forces of infantry should then start from the first available house on each side of the street and fight their way from house to house until they reach the houses flanking and overlooking the barricade. When they have reached that point the infantry that has been held in support of the artillery should make a direct assault on the barricade, unless it shall have been already abandoned.

When barricades have been carried, the pioneers or engineer troops should immediately remove or destroy them.

An enterprising commander, with a very small force of courageous men, may surprise and capture a barricade in the night by watching the opportunities offered through want of discipline and proper guard duty on the part of its defenders, as they might generally be caught in a condition of drunken stupor.

ATTACK AND DEFENSE OF HOUSES.

If rioters have occupied houses, the first question in the mind of the commander of a military force should be whether to avoid, to isolate, or to attack them; and an attack for the purpose of dislodging the rioters should not be made unless imperatively necessary.

The houses may have been occupied by the rioters without forethought or plan, simply on the impulse of the moment, as a vantage ground from which to impede or annoy the passage of troops through a street when the rioters are not in sufficient force to resist their passage in the open street. In such cases, if troops are under orders to proceed to a designated point for a specific purpose, it would generally be best to avoid these locations

by taking a circuitous route. If, however, houses so occupied would remain as a menace in the rear of the advancing troops, or as an obstacle to their retreat in case of disaster, it would be better to isolate or blockade the square in which the houses are located, so that the occupants would be held in a trap from which escape would be impossible, and in which they might be held and dealt with at the proper time.

If houses have been occupied as a place of refuge and defense by rioters who have been defeated in the open streets, or under the directions of competent leaders as flank defenses of barricaded positions or vantage grounds for fighting; or if, for any reason, it becomes necessary to dislodge the rioters, the attack on such houses must be made systematically and with thorough preparation of all the appliances needed to make an attack successful.

A direct attack on a house that has been barricaded for defense should never be made unless it is demonstrated that all other methods would be useless, and when made should be preceded by artillery fire that will destroy the interior defenses. The better method of attack, however, is the indirect.

If the houses occupied by the rioters are part of a block of houses, the troops should take possession of the first house in the block not so occupied. If the roofs are flat, the troops should attack the first occupied house by way of the roof, gaining access through the scuttles or by cutting holes in the roof. If the roofs are steep, access should be gained by breaking through the walls in the top story. It is infinitely better to fight downwards in a house than to fight upwards, and the latter should not be attempted if there is any possible way of avoiding it. Hand grenades or light dynamite bombs dropped down the roof scuttles or chimneys are good prelimi-

naries to the descent of the troops. After getting into a house no pause should be allowed in the attack; the defenders should be followed closely from room to room and floor to floor until resistance ceases or they are driven from the lower floor into the hands of the troops in the streets. The first house in the block having been cleared, the next adjoining should be attacked in the same manner, and so on until the whole block is cleared.

If all of the houses in a block are occupied by the rioters and it becomes necessary to make a direct attack on one of them in order to obtain a foothold from which to attack the others in the method I have described, the mode of attack must be determined by circumstances.

If the houses on both sides of the street are occupied by rioters it may be found best to make the attack on the rear of the house, as less likely to be well guarded and protected. In such case, if the houses on the parallel street are not occupied by the rioters, sharpshooters should be stationed in their rear windows to cover the attacking party while they are forcing entrance into the opposite house.

In the same way if the rioters only occupy the houses on one side of a street and it becomes necessary to make the attack on the front of a house, it may be covered by sharpshooters from the windows of the houses on the opposite side of the street, and the detachment of troops detailed for the attack should, if possible, approach from the right and keep close to the building line, for the reason that the defenders would be obliged to lean far out of the windows to fire upon them, and would thereby expose a large part of their own bodies to the fire of the sharpshooters. To force an entrance into a house under these conditions, small bags of gunpowder nailed against barricaded doors or windows, and exploded, will be found very effective.

Artillery, however, is the best instrument with which to open passage into a block of houses occupied by rioters. A foothold once gained in one house of a block, the balance is easy.

The methods of defending buildings entrusted to your care are as important for you to study as the methods of attacking buildings occupied by rioters. What I have outlined to you as methods of attack may be suggestive of the proper methods of defense.

I would assert, as a general principle, that no building should be defended from within itself until all its outlying defenses have been forced. The first defense should be outside of and at a considerable distance from the building. The building should be regarded solely as the citadel of the defense, the last refuge of the defenders.

Given the defense of an important building, the defenders should erect and occupy barricades on all possible avenues of approach to the building, and at such distances that neither dynamite nor fire could be used against the building by the rioters; these barricades may be designated the outer line of defense. All surrounding buildings that command the fronts and entrances to the building should be simultaneously occupied as a second or interior line of defense. In anticipation of the possibility of both the outer and inner lines of defense being carried, a reserve of troops should be posted within the building with instructions to prepare it for resisting assault and to protect the retreat of the outlying troops if they should be forced to seek refuge in it.

In preparing a building to resist assault, as many entrances as possible should be closed, and all the outer doors and windows of the basement and first story carefully barricaded with furniture, rolls of carpet, mat-

tresses, piles of books, or any available material. Loopholes should invariably be made so high that the assailants cannot use them from the outside, boxes and chairs being provided to enable the defenders to use them from the inside. Supplies of food, water, means of lighting, and facilities for extinguishing fire should be provided. If the building is accessible from adjoining buildings, the roof should be occupied, and partition walls on each story loopholed. If the situation seems to demand extreme precautions for defense, the stairways should be demolished and ladders substituted, all interior doors and partitions loopholed, and long halls or passage-ways barricaded. If the building is assaulted the defense must be obstinate, as defeat would probably mean annihilation.

DEFENSE OF RAILWAYS.

The defense of railways running through insurgent districts may be governed by the ordinary rules of war. The embarking, movement, and debarking of troops, covering bridges and culverts from destruction, and protecting tracks from being torn up do not properly come within the scope of this lecture. The defense of railroad property within a city, especially when its tracks traverse the city or penetrate nearly to its center, is a difficult problem, and the only one that we need now consider.

Passenger stations and freight depots in a city may be protected and defended in the same way that I have described for the defense of other buildings. The rolling stock of the railroad, and especially the loaded freight cars, should be collected at one point and placed in a solid mass on parallel tracks, in which condition they may be treated as a building and defended in the same manner—that is, the first defense should be at a distance

from the mass of cars. In parking the cars, open or "flat" cars should be placed on the outer tracks and at the ends of each line of cars, with bales of hay or barrels of merchandise arranged on them to constitute a bulwark for final defense against assault.

Keeping the railway tracks open within the limits of a city and preventing their being tampered with or destroyed should not be attempted by guards or a line of sentinels. It may be better accomplished by the constant running back and forth of a locomotive with open cars attached to its front and rear, carrying picked riflemen and a strong detachment of troops.

What I have already indicated to you in regard to all street-riot duty is particularly applicable to railways and railroad property within a city—keep the mob at a distance; do not plant yourselves on, within, or immediately about, the property to be defended; make your defense at such distance from it that the property cannot be molested while you maintain your outer defense.

CONCLUSIONS.

You probably think that I have exaggerated the dangers which threaten our country from mob violence in the future, and that I urge too strongly such preparations to suppress lawlessness as will prevent it from ever asserting itself. Few of you are aware, and probably the mass of unthinking and law-abiding citizens may be startled to know, that within the last two years the militia have been called into service thirty-seven times in twenty-six different States. If that is the record for the last two years, what may you expect in the future? Is it not time for the civil authorities to study the causes of these outbreaks and to ameliorate the conditions that give rise to them; and is it not time for the military

authorities to study the best methods of suppressing them if civil authority fails to remove the causes and prevent them?

The quelling of riots is not an easy matter. Compared with the excitement and honors of war against a national foe, there is little of the heroic in defending the integrity of the law and the safety of property; and yet there is no duty that can fall to the lot of a soldier that is so vitally important to the future of our country.

In dealing with a riot there must be no apparent hesitation. The lawless elements that would reduce the Republic to anarchy must be taught that so long as law exists there are men who will defend and enforce it, no matter how obnoxious or unjust the law may be; and that those who forcibly resist it will be treated for the time not as American citizens, but as felons. Fortunately most mobs in this country contain very few Amercan citizens, and those few are generally criminals and vagabonds.

The questions involved in street warfare are declared by the ablest French military writers to be the most difficult problems that a soldier is called upon to solve.

General Molineux, of New York, says: "While every other branch of the art has received serious and exhaustive consideration, while marked advancement has been made in military arms and methods during the past twenty years, the subject of the suppression of street riots and civil disturbances has failed to enlist that attention which its importance merits and demands." He further gives some valuable suggestions in regard to the duties of officers in street-riot duties, with which I so fully agree that I cannot do better than quote them for your consideration:

"As in all operations of war the closest attention is paid by commanding officers to the topography and

characteristics of the country in which a campaign is conducted, so the officers of the National Guard should apply themselves to a close study of their respective cities; acquaint themselves with different routes to various points; the character of the houses and stores on those routes; the obstacles to be overcome; the location of armories, police stations, ferries, docks on the river front, churches, and parks—important factors all in the problem of street warfare—so that they may know at each step of the way, by day or by night, the surroundings, the quickest and safest way to pass or move around obstructions, from what direction attacks are likely to come, and the most desirable points at which to make a stand. Accurate personal knowledge of this kind will be found invaluable in times of emergency."

"There is a great deal in the way that soldiers, whether militia or regulars, are led. Courage is a relative attribute with men. It can be developed by example, encouragement, and tact on the part of the officer. A cheerful, lively spirit inspires troops when under fire or in difficulties, and soldiers will cheerfully obey an officer if he is resolute, understands his business, and appears confident of success. Confusing and contradictory orders are mischievous; and, though promptness is always essential, it is better to be too slow than too hasty. Nervousness is not by any means lack of courage, but it is a quality which the officer must control in himself; for, if communicated to a body of troops, it leads to disorder, and sometimes to panic. Many conscientious officers find the responsibility weigh heavy upon them when friends and comrades are rapidly falling; but it is precisely at such a moment that the officer should be firmest. Let him plan to prevent loss as much as possible, but in action the necessity for it should no more affect him than the wiping out of figures from a slate."

"What is wanted in riots is a cool, calm exercise of *common sense*, confidence in one's own ability, and an intimate knowledge of the surroundings, rather than an unreasoning adherence to certain tactical movements. Tactics are correct in theory, and have been demonstrated so in practice; they have been prepared by the best military talent, in accordance with certain well defined and understood principles. But the circumstances must decide what movement is best, just as the patient's symptoms justify the physician in determining upon the remedy."

After all, you must realize that whatever time you may devote to the study of these problems, the actual conditions you may meet will not corrrespond exactly to the problems you have studied; but the training of your minds by such study will fit you for any emergency, and when you stand in the streets in command of men who represent law and order, and whose confidence you have earned, and direct their efforts to uphold the laws of your country and defend lives and property against the attacks of lawlessness and anarchy, you will not regret the time you have spent in preparing for the inevitable and will win the gratitude of your fellow-countrymen, to whom that inevitable now seems impossible.

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